

2004

Mediational tool use and strategic behaviors during collaborative online reading: a microgenetic case study of beginning students of German

Sabine Siekmann

University of South Florida

Follow this and additional works at: <http://scholarcommons.usf.edu/etd>



Part of the [American Studies Commons](#)

Scholar Commons Citation

Siekmann, Sabine, "Mediational tool use and strategic behaviors during collaborative online reading: a microgenetic case study of beginning students of German" (2004). *Graduate Theses and Dissertations*.
<http://scholarcommons.usf.edu/etd/2959>

This Dissertation is brought to you for free and open access by the Graduate School at Scholar Commons. It has been accepted for inclusion in Graduate Theses and Dissertations by an authorized administrator of Scholar Commons. For more information, please contact scholarcommons@usf.edu.

Mediational Tool Use and Strategic Behaviors during Collaborative Online Reading: A
Microgenetic Case Study of Beginning Students of German

by

Sabine Siekmann

A dissertation submitted in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
Department of Secondary Education
College of Education
Department of World Language Education
College of Arts and Sciences
University of South Florida

Co-Major Professor: Jeffra Flaitz, Ph.D.
Co-Major Professor: Tony Erben, Ph.D.
Ann Barron, Ed.D.
Robert Dedrick, Ph.D.

Date of Approval:
April 30, 2004

Keywords: Reading in a Foreign Language, Sociocultural Theory, Vygotsky, World
Wide Web, WebQuest

© Copyright 2004, Sabine Siekmann

Dedication

Diese Arbeit widme ich meinen Eltern, Marlies und Rolf Siekmann, die mir jederzeit die Möglichkeit und die Freiheit gaben meinen eigenen Berufs und Lebensweg zu finden zu verfolgen. Ohne ihre Unterstützung während meines akademischen Werdeganges seit der Grundschule wäre diese Dissertation niemals entstanden. Sie ist daher auch ein Stück ihrer Leistung.

I also dedicate this work to my husband Eric Markham who was there for me every step of the way and who has made this endeavor possible and bearable with his endless encouragement and patience even though I myself must have been unbearable at times.

Acknowledgements

It is impossible to list all who have contributed to the completion of this dissertation; nevertheless, I would like to recognize some individuals whose help has been invaluable.

First of all I would like to thank my major professors Drs. Tony Erben and Jeffra Flaitz. Dr. Erben inspired me to pursue a qualitative dissertation within a Sociocultural Theory framework and offered valuable feedback and encouragement along the way. I am also deeply grateful to him for serving as the second rater during my data analysis, which guided me to a deeper understanding of my research. Dr. Flaitz graciously provided structure while allowing me to find my own path. I am very thankful to her for engaging me in thoughtful discussions about the theory and data and for the thorough feedback she provided on the first drafts of my dissertation. My other committee members, Drs. Ann Barron and Robert Dedrick have also contributed insightful and valuable comments and suggestions. I have greatly appreciated and benefited from the instruction and guidance provided by the members of the Second Language Acquisition and Instructional Technology program, particularly Drs. Carine Feyten, Roger Cole, Wei Zhu, James King, and John Ferron.

I have also greatly benefited from many friends and colleagues during my studies and especially while finishing my dissertation from a distance. I am deeply indebted to my good friend Martha Castañeda for sharing the Ph.D. student experience with me; a time filled with intriguing academic discussions, studying for stats and for the quals, but more importantly with sharing challenges and laughter. Her support in the days leading up to my defense and her assistance in obtaining signatures on all required forms was

invaluable to me. I also owe a great deal to Shauna Schullo for being not only a wonderful boss, but a colleague and close friend with whom I was able to share many in-depth conversations about life as a graduate student and beyond. The many ways in which she offered assistance in all aspects of completing my dissertation are too numerous to list and they are greatly appreciated. I am pleased to acknowledge the emotional support of Kimberly Kalaydjian who always seemed to know just how I felt.

Many more individuals deserve to be acknowledged; namely my colleagues in the English Language Institute, the Department of World Language Education and at the Virtual Instruction Team for the Advancement of Learning and the Florida Center for Instructional Technology and of course my new colleagues at Gettysburg College. My heartfelt appreciation also goes out to my fellow SLA/IT students.

Finally I would like to thank my family members both in Germany and Idaho. Words cannot express how much I owe to my parents, Marlies and Rolf Siekmann, for their unwavering love and support; to my older siblings, Rainer and Antje, for making me try harder; and to my younger sister, Conny, for making me strive to be a good role model. I also owe a debt of gratitude to my parents-in-law, Steve and Nancy Markham, as well as to my brother-in-law Rhett Markham for accepting me into their family, listening to me during hard times and cheering my accomplishments. Last but not least I want to especially thank my husband Eric who sacrificed my company during the long periods I worked on this research and dissertation and strengthened me through his emotional stability.

With all this support it is plain to see that I had no choice but to succeed.

Table of Contents

List of Tables	vii
List of Figures	ix
Abstract	xii
Chapter I Introduction	1
Purpose	7
Rationale	7
Research Questions	10
Delimitations and Limitations	10
Definitions	11
Chapter II Literature Review	16
Towards a Definition of Reading	16
Cognitive Reading Processes	18
The Nature of Reading: Social or Cognitive	21
Research Directions in L2 Reading	26
Differences and Similarities between L1 and L2 Reading	27
Transfer	28
Authentic vs. Simplified Reading Materials	30
From Strategies to Strategic Activity	31
Reading Online Hypertext	34
Applications of Hypertext	35
Differences between paper-based and electronic texts	37

Online Hypertext Research Findings	38
Compared and Contrasting Cognitive Second Language Acquisition Theory and Sociocultural Theory of Learning	41
Implications for Research	43
Countering the Input/Output View of Language	44
Sociocultural Theory in Second Language Learning.....	46
Language as a Mediatlional Tool.....	46
Internalization and Regulation	48
Zone of Proximal Development.....	50
Activity Theory	51
Sociocultural Theory and Reading Research.....	55
Studying Reading Processes – From Introspection to Collaborative Dialogue....	58
Summary	65
Chapter III Method	66
Microgenetic Case Study Design.....	66
Setting	70
Participants.....	72
Procedure	73
Measures and Instruments.....	76
Background Questionnaire.....	77
Personal History Interviews.....	78
Collaborative L2 Online Reading Tasks.....	79
Task Procedure.....	87

Stimulated Recall Interviews	91
Data Analysis	92
Transcription of Verbal Interaction and On-Screen Actions	93
Transcription Conventions.....	95
Trustworthiness.....	99
Credibility	99
Transferability.....	100
Dependability and Confirmability	101
Summary	102
Chapter IV Data Analysis and Results.....	103
The Data.....	104
Background Questionnaire.....	106
Personal History Interviews.....	108
Managing the Data.....	112
Step 1: Identifying On-Task Actions	112
Step 2: Identifying Operations	115
Step 3: Identifying Language Related Episodes	116
The Research Questions.....	122
Research Question 1: Mediatonal Tool Use	123
Psychological Tool Use: L1 and L2.....	124
L1R.	126
L1RI	128
L1RIL1S.	128

L1S.....	130
L2R.	132
L2S.....	135
L2W	140
L2RIL1R.....	141
L2RIL1S	142
L2SL2W.....	145
L2RIVL1S – PICTURE.....	146
Mediational Artifacts	148
Computer.....	150
Online Dictionary.....	152
WebQuest Worksheet.	155
Dictionary	156
Research Question 2: Strategic Behaviors.....	159
Strategic Behavior Coding Scheme	160
Overview of Strategic Behaviors	169
Strategic Behaviors by Operation Type.....	173
Strategic Behaviors and Psychological Tool Use	187
The Role of the Teacher.....	189
Research Question 3: Change Over Time.....	190
Task 1	191
Task 2.....	193
Task 3.....	196

Overview of Strategic Behaviors by Task and Dyad.....	199
Dialogic engagement of dyad B/F.	201
Dialogic engagement of dyad C/R.....	208
Dialogic engagement of dyad D/C.....	213
Dialogic engagement of dyad L/J.	219
Dialogic engagement of dyad M/J.	224
Dialogic engagement of dyad R/T.	229
Summary	233
Chapter V Discussion	235
Discussion of Finding for Question 1	235
Discussion of Findings for Question 2.....	248
Discussion of Findings for Question 3.....	254
Theoretical Implications	256
Sociocultural Theory.....	256
Second Language Acquisition	258
Reading in a Second Language.....	263
Methodological Implications	268
Practical Implications.....	271
Directions for Future Research	272
Conclusion	274
References.....	275
Appendices.....	286
Appendix A: Course Syllabus.....	287

Appendix B: Background Questionnaire	291
Appendix C: Personal History Interview	292
Appendix D: Task 1	293
Appendix E: Task 2	297
Appendix F: Task 3	300
Appendix G: Stimulated Recall Interview Excerpts	303
Appendix H: Questions Prepared for Stimulated Recall Interviews	317
Appendix I: Transcription Conventions.....	320
Appendix J: Strategic Behavior by operation type	321
Appendix K: Overview of Strategic Behavior Tallies, by Dyad, Task, and Category	323
Appendix L: Examples of Codes Language Related Episodes.....	325
Appendix M: Tip Sheet Provided to Students During WebQuest 1	330
About the Author.....	End Page

List of Tables

Table 1. Differences between Paper and Electronic Texts	38
Table 2. Comparison of SLA within the Information Processing Model to Second Language Learning within SCT	42
Table 3. An Overview of the Three Levels of Activity Theory.....	53
Table 4. Problems with Individual Introspective Methods	62
Table 5. Semester Plan.....	72
Table 6. Overview of Instruments	76
Table 7. Overview of Task Content.....	81
Table 8. WebQuest 1 (Weather) Overview of Task Components	82
Table 9. WebQuest 2 (Shopping) Overview of Task Components	84
Table 10. WebQuest 3 (Planning a Trip) Overview of Task Components	86
Table 11. Summary of Techniques for Establishing Trustworthiness	100
Table 12. Overview of the Data.....	105
Table 13. Summary of Participants' Background Information.....	107
Table 14. Summary of Participants' Reasons for Studying German	108
Table 15. Personal History Overview	109
Table 16. Types of Off-Task Actions	113
Table 17. Off-Task Actions by Dyad.....	115
Table 18. Overview of Episodes Types by Task	119
Table 19. Episodes types by dyad and task.....	120
Table 20. Overview of the Coding Scheme Developed for Psychological Tool Use.....	125
Table 21. Overview of Categories for Strategic Activities.....	161

Table 22. Affective Strategic Activities.....	162
Table 23. Contextual Strategic Behaviors	163
Table 24. Socio-Procedural Strategic Behaviors	164
Table 25. Cognitive Strategic Behaviors	166
Table 26. Other Strategic Behaviors.....	169
Table 27. Overview of Strategic Behaviors by Dyad and Category.....	171
Table 28. Strategic Behavior by Operation Type	174
Table 29. Overview of Teacher Involvement in LREs by Dyad and Task.....	190
Table 30. Overview of Task Completion for WebQuest 1 (Weather).....	192
Table 31. Overview of Task Completion for WebQuest 2 (Shopping)	195
Table 32. Overview of Task Completion for WebQuest 3 (Planning a Trip).....	197
Table 33. Strategic Behaviors by Category and Task.....	200
Table 34. B/F Strategic Behaviors by Category and Task.....	203
Table 35. R/C Strategic Behaviors by Category and Task	209
Table 36. D/C Strategic Behaviors by Category and Task	214
Table 37. L/J Strategic Behaviors by Category and Task.....	221
Table 38. M/J Strategic Behaviors by Category and Task.....	226
Table 39. R/T Strategic Behaviors by Category and Task.....	231

List of Figures

Figure 1. An Expanded View of Interaction.....	22
Figure 2. Kern's Model of Literacy Illustrating Available Designs and Contextual Layers	26
Figure 3. An Example of Hypertext.....	35
Figure 4. L1 Reading Acquisition According to Cole and Engeström (1993, p. 25)	57
Figure 5. Overview of the Data Collection Procedure.....	75
Figure 6. Group Distribution and Layout of the Computer Lab	88
Figure 7. Overview of the Task Process	90
Figure 8. An Overview of Data Management and the Iterative Data Analysis Process...	94
Figure 9. T1_B/F line 614 (27:18).....	97
Figure 10. T1_B/F line 620 (27:45).....	97
Figure 11. T1_B/F line 622 (27:53).....	98
Figure 12. T1_D/C (3:38)	127
Figure 13. T3_R/C (2:00)	128
Figure 14. T1_M/J (13:00).....	129
Figure 15. T1_D/C (4:53)	134
Figure 16. T3_F/B (43:40).....	135
Figure 17. T1_R/C (14:24)	136
Figure 18. T2_D/C (06:20)	137
Figure 19. T2_M/J (19:34).....	138
Figure 20. T2_L/J (24:36).....	140
Figure 21. T1_M/J (15:05).....	141

Figure 22. T1_M/J (17:19).....	142
Figure 23. T2_R/C (21:04)	143
Figure 24. T1_D/C (16:42)	144
Figure 25. T1_L/J (36:26).....	145
Figure 26. T1_L/J (21:19).....	147
Figure 27. T2_D/C (10:28)	148
Figure 28. T2_M/J (19:40).....	151
Figure 29. T2_L/J (23:53).....	152
Figure 30. T2_L/J (23:58).....	152
Figure 31. T1_M/J (18:34).....	154
Figure 32. T1_M/J (18:36).....	154
Figure 33. T2_F/B (26:20).....	156
Figure 34. T2_F/B (26:27).....	156
Figure 35. T1_R/T (10:00).....	158
Figure 36. T2_F/B (24:29).....	159
Figure 37. T1_F/B (28:16).....	177
Figure 38. T1_F/B (28:26).....	178
Figure 39. T1_D/C (4:50)	181
Figure 40. T2_L/J (21:20).....	184
Figure 41. T3_DC (12:21)	187
Figure 42. T3_D/C (12:25)	187
Figure 43. Successful Completion of Task Components by Dyad	199
Figure 44. A Model of Psychological Tool Use in Adult L2 Reading	237

Figure 45. Overview of Psychological Tool Use during Collaborative Online Reading	239
Figure 46. An Expanded Model of Collaborative Online Reading	245
Figure 47. Relationship between Mediational Tool Use and Levels of Regulation	258

Mediational Tool Use and Strategic Behaviors during Collaborative Online Reading: A
Microgenetic Case Study of Beginning Students of German

Sabine Siekmann

ABSTRACT

This study investigated collaborative online reading from a Sociocultural Theory (SCT) perspective. Building on, yet transcending, research into learning strategies, the research focused on the concepts of mediational tool use, strategic behavior, and patterns of dialogic engagement of college student dyads as they completed a series of three collaborative WebQuests in a beginning German as a Foreign Language (GFL) class.

On-screen actions and verbal interaction of six dyads of beginning GFL students were recorded during three short-term, collaborative WebQuests. Full motion screen recordings were transcribed, and relevant episodes were coded for mediational tool use and strategic behaviors.

All dyads used their L1 as well as the L2 in mediating task success. The distinction between L1 and L2 was fluid, as students accessed a combination of psychological tools according to their own goals, ability, and orientation. Although the L1 was the dominant tool employed by the participants in this study, over time some students were able to use the foreign language as a psychological tool for completing the assigned task. Eleven combinations of mediational tool use were identified and related to levels of regulation. Students' strategic behaviors fell into five categories: affective, contextual, socio-procedural, cognitive, and other. The ratio between constructive and

destructive strategic behaviors provided insight into the overall collaborative climate.

Cognitive strategies were further divided into three theoretically salient categories:

mediation a student's own regulation of L2 tool use, mediating the partner's regulation of L2 tool use and mediating collective regulation of L2 tool use. Student dyads exhibited high frequencies of both self-mediation and collective mediation, which indicates that these students were working in their own and their partner's zone of proximal development. The nature of the dialogic engagement varied by dyad, but remained relatively stable over time. Students' goals and orientation towards the task impacted their overall collaboration. The role and development of L2 proficiency warrants further investigation. In peer collaboration, more symmetric dyad constellations may lead to more collective scaffolding and more positive dialogic engagement.

Chapter I Introduction

Reading is a complex activity, and reading in a foreign language poses additional challenges for the reader, such as limited linguistic, discursive, and sociocultural knowledge. While research in second and foreign language reading, especially in the areas of reading strategies and pedagogy, has proliferated in the last decades (Bernhardt, 1991; Carrell, 1988; Eskey & Grabe, 1988; Urquardt & Weir, 1998), findings are mixed and often inconclusive, leaving many open questions. Additional issues, such as reading non-linear texts (Cato, English & Trushell, 1989; Foltz, 1996; Rouet & Levenon, 1996) optimizing text for onscreen reading (Chiou, 1995; Chun, 1994; Clausen & Schmidt 1990; Lomicka, 1998, Nagata, 1999), and interaction via computer mediated communication (Beauvois, 1998; Kern, 1995; Warschauer, 1997), have been introduced by the increased use of new technologies.

The Internet is arguably the most influential innovation in education in the last 10 years. While the World Wide Web is not equally accessible across the globe, it has become commonplace in the USA– the context of this study. First and foremost a vast information source, the Internet puts at our fingertips up-to-date information on virtually any topic. Increasingly, Web sites are available in languages other than English, offering a new source of authentic language texts to foreign language learners and teachers. As online texts become a regular part of the language classroom, the discipline needs to investigate how foreign language learners interact with these texts and what the impact of this engagement on second language learning may be.

Reading and learning strategies research within a traditional input/output view of language (Cohen, 1998; Hosenfeld, 1976; O'Malley & Chamot, 1990; Oxford, 1990) has contributed to our understanding of the cognitive reading process. These contributions have not been invalidated, but rather form the foundation for further examination. Sociocultural Theory (SCT) provides a view of language and a theory of learning that allows researchers to pick up where the aforementioned traditional investigations have left off. Thus, this study investigated the reading process of beginning German as a Foreign Language (GFL) students during collaborative online reading tasks from an SCT perspective.

The selection of this theoretical framework warrants explanation. Good reading in both the first and second language is characterized by the reader's ability to access and apply appropriate resources at the appropriate time. Resources might include linguistic knowledge, process knowledge, and content knowledge, but also other readers and other texts. Reading is interactive, sociocognitive, and, most importantly, sociocultural. That is to say, recognizing reading is an interactive process foregrounds the interplay of text-based features such as words, phrases, and sentences, and reader characteristics such as background knowledge. Consequently, describing reading as a sociocognitive and sociocultural activity emphasizes the confluence of reading as individual activity and reading as social activity. In other words, reading involves both understanding linguistic features of the text and the culturally defined meanings of that text. Part of the difficulty students reading in a foreign language face is that texts are social artifacts embedded in a culture different from one's own. Despite the social components of the traditional sociocognitive view (Bernhardt, 1991), the result of reading is still seen as a

reconstruction of the text in the brain of the reader. While SCT is, in essence, a sociocognitive approach to language, it espouses a different view of language and is grounded in its own theory of learning.

According to Vygotskian SCT, learning is conceptualized as development that moves from the intramental (social) to intermental (individual) through transformational internalization (Lantolf & Appel, 1998; Wertsch, 1985). Intermental, however, is not to be interpreted as equivalent to cognitive in the traditional sense, as thinking is not believed to be located solely in the brain. Rather, “the mind extends beyond the skin” (Wertsch, 1991, p. 14). In other words, mental activity is more than firing enzymes in the brain; social and historical factors influence what we learn, how we learn, and why we learn. The end goal of development is not a predetermined outcome, but self-regulation. Self-regulated individuals can control their higher mental processes and actions without the assistance of other people or objects. Understanding reading from this perspective means understanding the functional roles of mediational tools within the activity of reading (Clay & Cazden, 1990; Cole & Engeström, 1993; Goodman & Goodman, 1990).

From a sociocultural perspective, language is one of the tools humans use to reach their fundamental goal, namely, to control and transform their environment and themselves. They cannot achieve this without the use of tools—tools thus mediate human activity. While physical tools, such as hammers, are used to exert control over the environment, psychological tools, such as language, can mediate the individual’s higher mental processes in addition to bringing about changes in others. Indeed, language is one of the most important psychological tools that mediate learning. Moreover, texts serve as social artifacts whose meanings have developed over time within the sociocultural

context of communities. Thus, learning to read, a highly value-laden activity, is primarily social rather than individual, like any other human activity.

Reading comprehension, the supposed outcome of the reading activity, is frequently the major interest of reading research (Bernhardt, 1991; Carrell 1988a, 1988b; Steffensen, 1988). This investigation, however, grounded in a sociocultural framework, focuses on the reading activity—that is, how readers use mediational tools as they collaboratively engage in reading. In this regard, foreign language reading poses a particular problem. Depending on the individual motives and goals of readers, the goal may be to understand the text, to gain access to a different culture, or to complete the task assigned by the teacher. During these problem-solving activities, students encounter obstacles that may force them to lose control of their intramental autonomy (Vygotsky, 1978; Wertsch & Hickman, 1987). If that occurs students are not able to draw on automatized mental processes, but must consciously take action and employ “strategies” to move forward. Obstacles can be task-related, linguistic, cultural, interpersonal, etc. It is through engaging with these obstacles that development can occur, as students grasp for mediation tools in their environment and make use of overtly social interaction. The social and physical context of the activity determines which mediational tools are available to the learners.

In order to investigate students’ use of mediational tools, in the study presented herein, pairs of participants were recorded while completing three online reading tasks. The interaction between peers working collaboratively provided insight into their microgenetic development. Microgenetic development is one of the concepts central to Vygotskian SCT. Arguing that higher mental functions, such as learning, are based on

sociocultural history, Vygotsky proposed four genetic (developmental) domains—phylogenetic, sociocultural, ontogenetic, and microgenetic (Wertsch, 1985). The phylogenetic domain is concerned with how human mental functions developed over time to be unique from that of animals. The sociocultural domain concentrates on how different cultures developed into distinct communities. The ontogenetic domain explains how children develop into mature members of society. Finally, the microgenetic domain is concerned with short-term development in learning a task, or even a word. This study investigated microgenetic development of L2 reading development both within a few instances (within one episode) and over a period of eight weeks, as participants completed three WebQuests.

Microgenetic development cannot be understood without knowing the context in which it occurs. The context of reading is the strategic activity in which the students are engaged. Students, teachers, classrooms, and the text have a socio-historical context, all of which bear on the way the problem is solved. Reading, then, is seen not as individual activity, but as the strategic activity in which learners engage during a collaborative problem-solving task. How students use various mediational tools available to them during their reading is under investigation here. The interacting elements include: each individual's personal history, the collaborative dialog in which the two students engage, their interaction with online texts, and their use of the computer as a tool. Another resource available in this system is the teacher/researcher whose involvement also plays a part in the strategic activity.

Most investigations into the reading process have been conducted in first language reading or in the reading of English as a Second Language. This research will

contribute to the less commonly investigated population of GFL learners. Past research has also focused on paper-based expository texts or narratives, with an emphasis on reading comprehension (Carrell, 1983; Steffensen, 1988), reading strategies (Cowan, 1976; Hosenfeld, 1977; O'Malley et al., 1985), and vocabulary acquisition (Hudson, 1982). However, the increasingly commonplace use of the Internet for reading in personal, professional, and educational settings creates more opportunities to explore this medium for reading research purposes.

Thus far, most investigations of hypertext reading have been restricted to expository and narrative texts which were enhanced with multimedia aids such as glosses, images, and translations (Chun & Plass, 1996; Davis & Lyman-Hager, 1997; Lomicka, 1994). Other research has focused on discovering how best to structure links for CD-based encyclopedias and other reference materials (Cato, V., English, F., & Trushell, J. 1989; Chun & Plass, 1997; McKeague, 1996; Rouet & Levonen, 1996). However, only limited knowledge has been gathered about the process of reading informational Websites like those accessed every day by millions of people. This investigation utilized authentic German language web sites designed for such purposes as looking up the weather forecast, shopping, and planning a trip. Making use of authentic web sites immerses students not only in German language, but also in German culture, as these texts are part of the target culture. The online reading tasks go hand-in-hand with the thematic units of most beginning foreign language classes and are created within the framework of WebQuests (Dodge, 1997). WebQuests are inquiry-based tasks during which students access Internet resources to locate information they compile within an authentically framed activity. By reading in pairs, students have the opportunity to

engage in collaborative dialog as they engage in strategic activity during the problem-solving task presented via the computer.

Purpose

The purpose of this study is to deepen our understanding of the online reading process in a foreign language, specifically the reading process of beginning German students during collaborative online reading tasks. Building on, yet transcending, traditional reading and learning strategies research, a Vygotskian SCT framework undergirds this investigation. Strategic activity is the concept used to denote the intricate connection between doing, speaking, thinking, and meaning. This investigation explores the types of mediational tools used by student dyads as well as the ways in which these tools are used strategically to accomplish the problem-solving task. Within the larger problem to be solved, collaborative WebQuests, students encounter obstacles they need to overcome. What mediational tools dyads draw upon and how they are used in strategic behavior are of special interest. Lastly, if and how mediational tool use and the dialogic engagement within the dyads change over time as the tasks become more difficult is investigated from a developmental standpoint.

Rationale

Reading in combination with other forms of literacy is arguably the most important skill for academic foreign language learning (Alderson, 2000; Kern, 2000; Lee, 1997). In the industrialized world, the Internet is becoming a ubiquitous technology for reading in professional, personal, and educational settings, both in L1 and L2 (Gallimore

& Tharp, 1990). Within this socio-historical context, retrieving and reading information online is replacing certain types of paper-based reading. The Internet provides seemingly unlimited access to authentic reading materials on virtually any topic, representing different genres, written for different audiences and with different purposes. Reading the news, checking on weather conditions, finding information on a specific topic, shopping, and making travel arrangements are probably among the most common everyday activities performed on the Internet. This type of reading ties well into the cultural and thematic content covered in beginning language classes. This is evidenced by the fact that textbooks often include examples of realia such as train schedules, weather maps, store advertisements, and newspaper clippings. However, these items generally provide only a small sample and cannot be customized according to the interests of the students. They are also too often out-of-date. The Internet has emerged as a possible solution to this problem. For example, a weather map provided in an introductory chapter of a first-year textbook shows a particular region of the world during a particular time of year. By using the Internet, on the other hand, students can access current weather conditions in virtually any part of the world. In the context of German, it is very easy to access weather sites that provide this type of information. The same is true for topics such as shopping and travel. Recognizing this potential of the Internet, many foreign language textbooks have started to include online reading activities in their ancillary materials. However, even though these materials are being created and used by a large number of practitioners, no theory of online reading has been advanced.

Print-based reading processes and strategies have been investigated both in L1 and L2 reading; however, as a field, little is known about how students read and make

meaning of online texts. Reading online hypertexts shares similarities with paper-based reading, but there are also substantial differences. While not all paper-based reading is linear (for example, reading the newspaper) and not all online reading is nonlinear (such as reading an online research paper from beginning to end), these distinctions hold true for the type of Internet sites used for everyday information retrieval. Online weather sites, for example, are marked by a multitude of links that take the user to resources such as weather maps and satellite images, but also to unrelated topics such as health or soccer. Kern states: “Reading and writing with computers therefore adds layers of complexity to an already complex process” (2000, p. 224). Consequently, one needs to know more about online reading, not just in the native language, but additionally in a foreign language.

In this study, reading was not approached from the traditional input/output model of language that places the process of reading comprehension within the brain of the individual students. Again, SCT views learning as a social activity. While researchers who apply SCT and its research tradition have been productive in the areas of writing, planning for speaking, and grammatical competence, very few investigations have targeted reading from a sociocultural perspective.

Therefore, this study furthers the development of L2 reading in three ways. First, it offers a principled investigation into the relatively new phenomenon of online reading. Second, it uses SCT (Vygotsky, 1962, 1978, 1981) and the related Activity Theory (Leontiev, 1981) as a framework for the investigation, thus alleviating theoretical and methodological constraints which have in the past limited traditional second language

acquisition research. Finally, it gives attention to foreign language reading as a social enterprise.

Research Questions

Since this research is hypothesis generating rather than hypothesis testing, the following questions guided the data collection and analysis.

1. What mediational tools do beginning German as a Foreign Language students access to negotiate technology as they work to accomplish collaborative online reading tasks?
2. How do beginning German as a Foreign Language students use these mediational tools to regulate their strategic activity during collaborative online reading tasks?
3. How does strategic activity through dialogic engagement develop over time?

Delimitations and Limitations

This study was conducted as a classroom-based case study as this design is most compatible with the research methodology of SCT (Smagorinsky, 1995). As with all human activity, research is situated in a sociocultural context. Therefore, the researcher, the participants, and the data cannot be seen as neutral, but rather as interacting elements of the setting.

Twenty students from a large southeastern university enrolled in the section of German 1120 taught by the investigator and all agreed to participate in this investigation. Twelve students (six dyads) participated in all three WebQuest activities. Episodes of

dialogic engagement of student dyads during these collaborative online reading activities were used as the unit of analysis. It is not the aim of this investigation to provide generalizations to the larger population, but rather to analyze in-depth student dyads' strategic activity during the online reading process.

Designed as a classroom-based case study, this qualitative mode of inquiry values and investigates learners as individuals as well as members of the classroom and larger culture. All learning takes place in context—in a specific institution, with a specific teacher/researcher, with specific students, and using specific tasks. The fact that this investigation is embedded in a real-life classroom increases its ability to inform teachers and researchers, precisely because the context is acknowledged and described. Investigating this admittedly unique situation is thus not seen as a detriment, but as a benefit. Within a qualitative research framework, transferability takes the place of the quantitatively defined concept of generalizability. As the teacher of the participants in this study, the researcher has extended exposure to the setting. Rather than espousing the role of an impartial observer, a participant observer can provide an *emic* perspective. The goal is thus to provide sufficiently thick description to allow individuals to decide whether or not the findings are transferable to his or her specific content.

Definitions

Conduit metaphor: a view of language in which it is understood as a means to transmit meanings. Meaning is encoded by the speaker/writer, transmitted via sound waves or written language, and decoded by the hearer/reader.

Emic: Using an emic approach, a researcher strives to observe, describe, and understand a phenomenon from the perspective of those involved. Teachers and students have an emic (insider's) perspective on their own classroom. The opposite of emic is etic: the outsider's perspective of a phenomenon.

Hypertext: In hypertext, pieces of information are linked to one another via links. The text is not presented linearly. The reader navigates through the text by clicking on linked words, phrases, or pictures. The text found in the Internet is one example of hypertext, but hypertext is also utilized on CD-ROM applications and multimedia presentations.

Input: the language to which a learner is exposed. Input can be modified to be comprehensible to the learner. It is frequently associated with an information processing view of language, in which language input is processed in the brain.

Inner Speech: speech for oneself. This form of engaging in an intramental dialogue with the self is not verbalized audibly and is used as a regulatory mechanism.

Interaction Hypothesis (in the field of Second Language Acquisition): A hypothesis holding that face-to-face linguistic interaction rather than input by itself promotes language learning. The term is closely tied to the concepts of input and output.

Interaction (reading): the combination of top-down and bottom-up processes of reading. Also refers to the active interplay between the reader and the text.

Interaction (human computers): field of study of the design, implementation, and evaluation of interfaces that allow humans to provide input to computers.

Intermental: overtly social processes involving external dialog between and among individuals. Vygotsky argued that all processes are first intermental (social) before they can become intramental (see below).

Internalization: the process through which external processes are appropriated by an individual through learning.

Intramental: within an individual. However this does not mean that individuals are truly solitary; even intramental processes are social because they are merely internalized forms of social interactions.

L1: an abbreviation for first or native language. In this investigation the L1 of most students is English.

L2: an abbreviation for second or foreign language. The abbreviation L2 is frequently used in contexts where no distinction is made between foreign and second language learning. Second language learning generally refers to learning a language other than one's native language in a country where that language is the official language-- for example, a native speaker of English who is learning German in Germany. Foreign language learning, as opposed to second language learning, generally refers to learning a language other than one's native language in one's home country--for example, a native speaker of English learning German in the USA.

Learning Strategies: "Learning strategies are steps taken by students to enhance their own learning" (Oxford, 1990, p. 1). Within traditional SLA research, learning strategies are seen as linked to individual learner characteristics such as learning style, cognitive style, age, and gender.

Mediation: an indirect way to exert control over the world and the self

Mediational tools: the means used to exert control over the world and the self. This term is grounded in Vygotskian SCT. According to this theory, tools can be physical (for example, a hammer) or psychological (for example, language). Psychological tools are also called signs.

Output: the language a learner produces. It is frequently associated with an information processing view of language, in which the learner's processing of the language leads to output.

Private Speech: Externalized yet self-directed speech, which opposed to social speech acts as a regulatory mechanism rather than as a means of communication.

Regulation: the degree to which an individual is in control over his or her environment, the tools they use, and the self. Different levels of regulation are object regulation, other regulation, and self-regulation

Strategic Behavior: a term used in this investigation to discuss strategic behavior with the framework of SCT and Activity Theory. It refers to specific mechanisms individuals employ within goal-directed activity. In contrast to the cognitively bound definition of strategies employed by Oxford (1990) and others, SCT "maintains that the emergence of strategies is the by-product of goal-directed situated activity in which mediation through artifacts, discourse, or others plays a central role in apprenticing novices into a community of practice" (Donato & McCormick, 1994, p. 457).

WebQuest: an inquiry-based activity during which students access online resources to answer thematic questions. Critical attributes of a WebQuest are: an introduction,

description of the task, list of information resources, description of the process, guidance, and conclusion.

Chapter II Literature Review

The review of literature that follows is intended to elucidate the current state of theory, research findings, and research methods shaping this investigation. An overview of contributions and shortcomings of traditional L2 reading and learning strategies proposes SCT as an impetus for new research. Moreover, since SCT is a relatively new arrival within second language research, special attention will be paid to illuminating those points in which it challenges the traditional L2 research agenda. The field of hypertext research will be surveyed only as it pertains to reading. Finally, an overview of research methods identifies the case study design focusing on microgenetic development during joint problem solving as the appropriate methodology for reading research within an SCT framework.

Towards a Definition of Reading

Reading is a complex activity that defies simple definition. Clearly, dictionary definitions do not suffice. Consequently, many major works on reading start with a discussion of the multitude of elements involved in reading comprehension (Alderson, 2000; Bernhardt, 1991; Urquart & Weir, 1998). Even definitions put forth by experts in the field tend to be inadequate within a SCT framework. For example, they tend to focus on an encoding/decoding metaphor. Lee (1997) defines reading as: "...the activation, application and interaction of decoding, encoding, and comprehension processes that result in knowledge gain from something written or printed" (p. 152). This definition

does not go beyond the transmission metaphor of reading and holds on to the input/output view of language.

In spite of a 10-page discussion on the nature of reading in which they acknowledge that all reading has social aspects, Urquart and Weir (1998) ultimately approach reading from a primarily cognitive view that fails to transcend the encoding/decoding view of language. This is evident in their definition: “Reading is the process of receiving and interpreting information encoded in language form via the medium of print” (p. 22).

Both of these definitions also have in common a focus on the outcome—reading as the process of gaining knowledge that has been encoded into the text by the author. Thus, successful reading should lead every reader to understand the correct meaning that was initially encoded in the text. The sociocultural perspective argues not only that the conduit metaphor of communication limits our ability to understand reading, but also that the most important question about reading—*how* readers as human beings approach texts as social artifacts—is not addressed by these definitions.

Grabe (1991) uses a more fruitful approach in his definition of reading as he attempts to explain what characterizes an effective and efficient reading process. He states:

It is well known that simple definitions typically misrepresent complex cognitive processes such as reading. Rather, descriptions of basic knowledge and processes required for fluent reading make a more appropriate starting point. A description of reading has to account for the notion that fluent reading is rapid, purposeful, interactive, comprehending,

flexible, and gradually developing (cf. Anderson, Hiebert, Scott, & Wilkinson, 1985; Grabe, 1988b; Hall, White, & Guthrie, 1986; Smith, 1982). (p. 378)

Grabe's description is appealing in the context of this study since it is not bound to any one school of reading, but acknowledges the multifaceted nature of reading: that it is defined by the reader's purpose, combines a variety of processes in complex ways, and emerges over time.

As Grabe accurately points out, this description only provides us with a starting point. What follows is a review of the main discussions in reading research as they relate to the study proposed herein. Most in-depth explanations of reading and reading comprehension (for example: Alderson, 2000; Bernhardt, 1991; Grabe, 1991; Kern, 2000; Urquart & Weir, 1998) discuss one or both of the following different, yet interconnected, approaches: 1) cognitive processes involved in reading comprehension (bottom-up vs. top-down) and 2) the nature of reading (cognitive vs. social). Acknowledging the contribution of these research traditions, this study adopts a viewpoint framed within Vygotskian SCT and its view of language/reading as mediated and mediating activity.

Cognitive Reading Processes

The field of cognitive reading processes is centered around the issue of whether the process of reading starts with the smallest unit of a text (the letter) and works its way up to the meaning of the text or whether the reader starts with hypothesizing a meaning and checks the text for evidence of that meaning. This research tradition has coined the

terms “bottom-up” and “top-down” for the respective views. Ultimately, interaction between and among different processes has emerged as the preferred view of the reading process. However, the term “interaction” itself has been used in different ways. Each of the terms introduced above will now be discussed.

A bottom-up view of reading is embodied in the phonics approach, in which beginning readers start with the sounds of letters, form words, sentences, and so on. The reader decodes sequentially. This view of reading was preeminent before the 1970s, and it assumes that the meaning is in the text. The reader is thus placed into the role of a passive decoder of sequential graphic, phonemic, syntactic, semantic systems, in that order.

The 1970s and 80s saw a counter movement to the primacy of decoding by shifting focus toward top-down processes. This view places more importance on the role of the reader, arguing that what the reader brings to the text is more important than what is in the text. As an active problem solver, the reader is seen as constantly making inferences and testing hypotheses rather than simply decoding what is already there.

Schema Theory (Bartlett, 1932; Carrell & Eisterhold, 1988; Rumelhart, 1980) is generally viewed as an important influence in the top-down view of reading because it argues that the meaning of the text is, at least in part, determined by the schemata that the reader brings to the text. “According to schema theory, the process of interpretation is guided by the principle that every input is mapped against some existing schema and that all aspects of that schema must be compatible with the input information” (Carrell & Eisterhold, 1988, p. 76). This statement portrays schemata as immutable, but that is not the case, according to SCT. The reader’s knowledge or expectations influence that to

which he or she pays attention, and ultimately, how the text is interpreted. New information can sometimes be assimilated into existing schemata. Other times, however, existing schemata have to be altered to accommodate new information. Thus, the schema and the information are compatible. It should be pointed out that Schema Theory is actually more closely aligned with an interactive view of reading because text features are involved in activating both content and formal schemata (Carrell & Eisterhold, 1988).

More recently, interactive models acknowledge the contribution of both types of processing. McNeil (1984) sees the text as “a blueprint for meaning” allowing for both the text and the reader to contribute to the meaning of a text (p. 5). In her discussion in *Interactive Approaches to Second Language Reading*, Carrell (1988a) observed that successful readers use both top-down and bottom-up skills while unsuccessful readers employ either decoding (bottom-up) or hypothesis testing (top-down). Skillful reading requires the deployment of the appropriate strategies at the right time.

This study views reading as an interactive process, but expands the definition of the term. According to Grabe (1991), a slight discrepancy traditionally exists between the two uses of the term “interaction” in reading research. L1 researchers consider interaction to be between the top-down and bottom-up processes as described above, while L2 researchers adopt a more general definition of interaction as that between the reader and the text. Web pages themselves can be considered to be interactive because the reader has to act upon them by clicking or typing to advance the text (Dudfield, 1998; Godwin-Jones, 1998). Ganderton (1999) asserts:

...reading of authentic L2 texts on the Web can be interactive in the fuller sense of the word, when considered as interaction not just between the

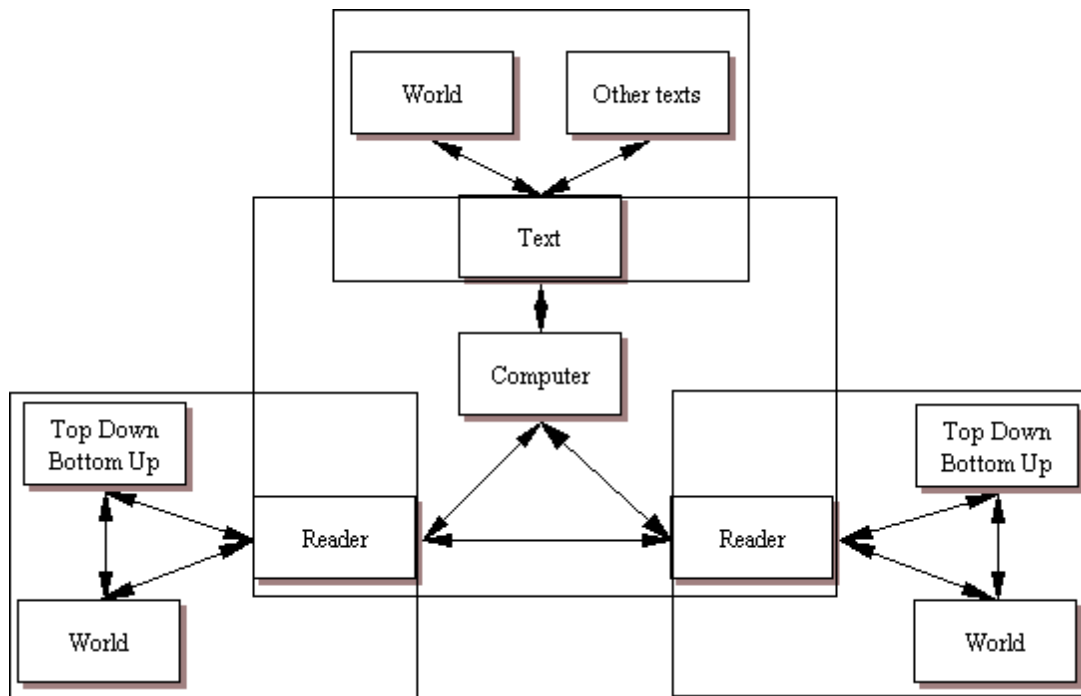
learner and the computer, but also between the learner and the text, and indeed among the various mental processes occurring within the learners themselves. (p. 50)

It is surprising that in his investigation of student dyads who completed Internet-based reading assignments, Ganderton does not include yet another type of interaction—that between the two students working together. Readers use top-down and bottom-up processes and combine text features with their individual contribution to the text. While working collaboratively with online texts (which are connected to a variety of other texts), both members of the dyad also interact with each other and, together, they interact with the computer as the medium of text presentation. Furthermore, the text and the readers are also socio-historically bound by the world. Figure 1 illustrates the forms of interaction mentioned in previous research and includes two readers and a computer to emulate the setting of the investigation described herein.

The Nature of Reading: Social or Cognitive

The top-down/bottom-up debate focuses on the individual cognitive processes within the brain. This section begins to call into question the notion that reading, thinking, and learning take place within the head of an individual. The question underlying the discussion over whether the nature of reading is cognitive or social is whether the meaning is in the text waiting to be extracted by the reader, or if the meaning is constructed by the reader, who is embedded in his or her social context.

Figure 1. An Expanded View of Interaction



From a cognitive view, reading is an intrapersonal problem-solving task resulting in meaning extraction. Reading is thus an individual act taking place within the learner's brain. Since, according to this perspective, reading consists of separate and measurable processing steps, each reader should go through the same steps and, therefore, arrive at the same successful outcome (Bernhardt, 1991).

From a social perspective, on the other hand, meaning is constructed by the reader during reading. Viewed from this paradigm, texts are "manifestations of culture," and reading is a process of cultural transmissions, enculturation, and socialization (Bernhardt, 1991, p. 10). A purely social analysis allows for no pre-specified meanings within the text. Furthermore, each reader has to be seen in his or her unique cultural context. These

assumptions, however, present the reading researcher with a *cul-de-sac*. As Bernhardt argues, “This view ultimately implies that seeking generalized principles of text processing is futile, since each data collection, for example, is an artifact of place and time” (1991, p. 11). She then goes on to explicate her sociocognitive view of reading.

Predictably, a sociocognitive perspective values both cognitive and social factors in reading. Bernhardt’s influential 1991 sociocognitive model of second language reading combines three cognitive aspects (word recognition, phonemic/graphemic decoding, and syntactic feature recognition) and three social aspects (intratextual perception, metacognition, and background knowledge) (p. 169). Both the input provided by the text and its features and the way the reader constructs meaning based on these features work together.

Bernhardt’s model has suffered some criticisms, which are only briefly summarized here. While Bernhardt mentions intratextuality (reconciling past, present, and future elements of a text), Spivey (1997) argues that intertextuality (connecting meaning from past texts) also needs to be considered. In addition, background knowledge is generally perceived as a measurable amount of knowledge about the text’s content, rather than viewing it as a result of personal development within a specific socio-historical context. Finally, the term metacognition is often used synonymously with strategies. The social nature, and, in fact, origin, of learning is an important tenet of SCT. Itself a sociocognitive theory, sociocultural theory does not, however, grow out of the conduit metaphor of language. This theory is discussed in more detail further on because of its implications for the methodology and the unit of analysis.

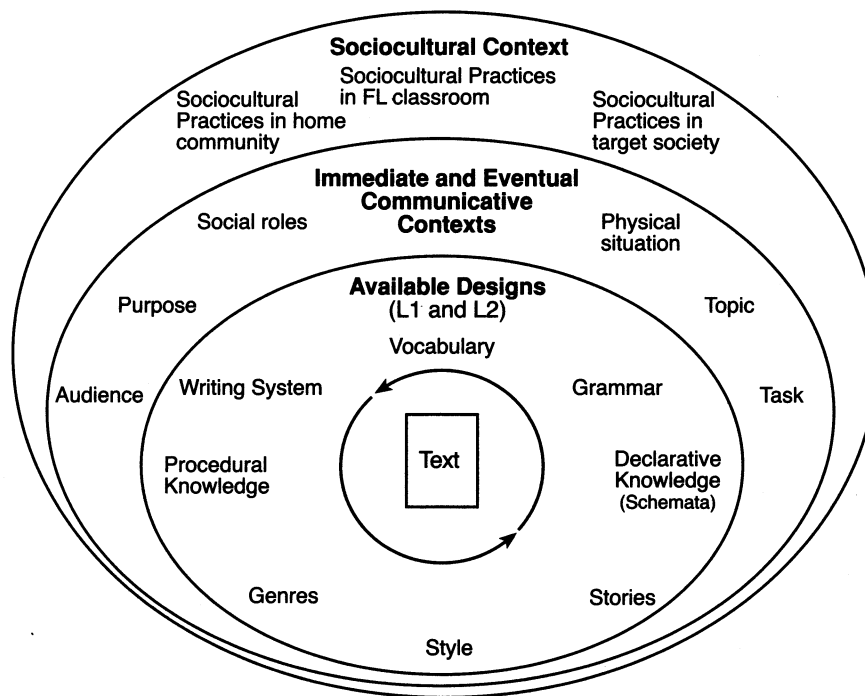
As mentioned earlier, Grabe (1991) pointed out that reading is purposeful. In academic settings, one common purpose for reading is writing. University classes require students to read a large amount of materials and display their knowledge in writing. This connection between reading and writing as socially valued activities leads into the area of literacy. In his recent work *Literacy and Language Teaching*, Richard Kern (2000) offers a model of literacy using the metaphor of “design” (p. 63). His model moves from available designs as the innermost circle to the sociocultural context as the outermost circle. Textual features such as grammar, vocabulary and style are only the first level of difficulty foreign language learners encounter in L2 texts. “Immediate and Eventual Communicative Contexts” such as purpose, task, and social roles also need to be negotiated in order to understand texts. The outermost circle, that of the “Sociocultural Context”, ultimately influences all levels. The elements of his model, each of which relate to both L1 and L2 as well as C1 and C2, are presented in Figure 2.

Kern (2000) also proposes that the way reading and writing are usually taught in the classroom does not maximize the designs available to L2 readers. He describes the traditional teaching sequence as 1) students read a text as a homework assignment, 2) the text is discussed during the following class period, and 3) students write about the text as homework assignment (p. 131). This well-known sequence is problematic not only because it views the text as input for students to “store” in their brains (the processing unit) until producing “output,” but also because it assumes that students can go home to read the text on their own in an individual activity. This solitary act, however, deprives learners of resources that they may well need in order to mediate their learning. In Kern’s (2000) words:

...the problem with the traditional sequence of instruction is that students get little direct help with what they typically report to be the most difficult part— reading and writing. It is quite possible, in fact, that reading and writing are often perceived as ‘difficult’ precisely *because* they are so often done outside of class, by oneself. Were reading and writing to be more frequently brought into the mainstream of classroom activity, made to be collaborative as well as individual activities, more integrated with speaking and with one another, they would perhaps not seem so difficult. (p. 131) (emphasis in the original)

Kern’s model acknowledges the complex nature of reading. He builds on Bernhardt’s sociocognitive model, but starts to overcome the division between social and cognitive views of reading. The sociocultural context level shapes the remaining two levels, which expresses his rejection of a pure input/output view of reading. He does not, however, provide a theory of the confluence of cognitive and social aspects of reading and language learning: that building block is provided by SCT. Before explain this theoretical framework in more detail an overview of current research directions in L2 reading illustrates the contributions and shortcomings of reading research within the conduit metaphor of language.

Figure 2. Kern's Model of Literacy Illustrating Available Designs and Contextual Layers



Note. Reproduced from Kern, 2000, p. 63

Research Directions in L2 Reading

In this section an overview of major research directions and findings in foreign language reading is provided. Particular attention will be paid to differences between L1 and L2 reading, the transfer of L1 reading skills to L2 reading, and the types of texts used to teach reading. Throughout this review the ways in which SCT can provide new impulses where previous theory and methodology have led to inconclusive findings will be highlighted. The discussion of reading strategies epitomizes this potential of SCT.

Differences and Similarities between L1 and L2 Reading

First language reading research has a much longer history than its second or foreign language equivalent, and consequently L2 reading research has adopted many principles and methods from L1 reading studies. Reading, be it in a first or second language, is certainly one of the most important skills for academic learning, as it enables students to grow intellectually from the multitude of materials available through text. This section highlights areas of difference between L1 and L2 reading.

In the field of L2 reading, it is generally assumed that students already know how to read in their native language (Bernhardt 1991)—this is certainly true of the students in this investigation, as they are enrolled in classes at the University of South Florida. However, as Alderson (2000) points out, when children learn to read in their native language, they already have a vocabulary of several thousand words, as well as a sense of the grammar of their native language.

Adult learners of a foreign language, like those in this study, are learning the language in addition to learning to read it. Even though communicative language teaching focuses on oral and aural skills, reading is part of the language learning process from the beginning. In addition, advanced language learners are expected to read extensively.

In the field of L1 reading, parents and teachers spend considerable time on the development of reading skills, since being able to read quickly and efficiently is a crucial component of the development of every learner. In the foreign language classroom, however, speaking proficiency has been considered to be more important in recent years, marginalizing the teaching of reading. As a consequence, reading is often seen as

reinforcing vocabulary, syntax, and morphology, rather than as a tool for learning. At best, texts are viewed as providing language input, engendering the conduit metaphor of language, which is being refuted by SCT (Gallimore & Tharp, 1990; Moll & Greenberg, 1990; Smagorinsky, 1998; Smagorinsky & O'Donnell-Allen, 2000).

It is important to reiterate that texts are social artifacts, and texts written in a foreign language are artifacts of a culture unfamiliar to the reader. Bernhardt (1991) states aptly, “Critical within the second language framework is that readers and the texts they encounter represent separate and distinct social entities. Second language readers approach a text from their first language framework” (p. 16). Consequently, students need to learn to negotiate new lexical items, new texts, and new cultures. Existing literacy skills can facilitate reading foreign language texts, but the notion of transfer is complex, and will be discussed in the next section.

Transfer

As stated in the previous section, within L2 reading research it is assumed that some form of L1 literacy is already in place when adult students learn a foreign language. This view has led to the investigation of the influence that existing knowledge in the native language has on learning to read and write in a second or foreign language. Alderson poses the question in his 1984 article, “Reading in a Foreign Language: A Reading Problem, or a Language Problem? Alderson concludes that some linguistic knowledge is obviously necessary to comprehend a written text. Therefore, the question becomes “what type of linguistic knowledge is needed and how much of it.” The answer to this question has not yet surfaced in L2 reading research within the

input/output/interaction framework. Carrell (1988), applying quantitative analysis, found that vocabulary is the single best predictor of reading comprehension, and that L2 linguistic knowledge accounted for 30% of the variance within reading comprehension. The remaining 70% of variance remains unaccounted for. Clearly, paragraph and text level elements, such as cohesion, rhetorical form, and genre, as well as background knowledge, all of which are embedded in cultural practices, influence reading comprehension as well.

However, the purpose of this investigation is not to explain levels of reading comprehension on the basis of isolated elements; the focus is on the process. Within a sociocultural framework, reading is seen as social and strategic activity embedded in the context of the activity itself. In order to understand the process of reading, it thus becomes necessary to understand the activity in which readers are engaged and the mediational tools they utilize to solve the problem as they perceive it. In reading foreign language texts, readers face more obstacles than they do when reading in their native language due to limited linguistic and social knowledge. However, adult foreign language readers have access to L1 linguistic and literacy skills that may assist them in solving the reading problem. At the same time, L2 readers are interacting with a social artifact (the text and the language of the text) embedded in a different socio-historical context. If reading takes place within formal instruction, the way schooling is viewed by each participant also has an impact on the activity.

Authentic vs. Simplified Reading Materials

The notion of simplified reading materials has its origins in the encoding/decoding view of language. Most notably, Krashen's Input Hypothesis (Krashen, 1985) makes the claim that if enough comprehensible input is provided, speaking and grammar will develop automatically. To be comprehensible, input needs to be modified to be at the $i+1$ level for the learner, which means that the language used by the instructor should be one unit above the current level of a learner's proficiency (i). Texts as input and comprehensible input as the necessary and sufficient condition for language learning are two underlying assumptions for using modified (simplified and elaborated) texts for language learners.

Both the input/output metaphor and Krashen's $i+1$ are incommensurable with SCT mainly because it assumes a directional development towards a given target point (for a detailed discussion see Dunn & Lantolf, 1998). While the teacher (the language expert) needs to provide assistance to the student (the language novice), the accommodation will be as varied as the situation in which it will be provided. The notion of scaffolding incorporates the existence of cultural norms and focuses on strategic behaviors that assist in solving problems rather than on a particular obstacle.

Even within mainstream L2 reading research, a strong argument has been made for the use of authentic texts (Kern, 2000). If texts are social artifacts, as SCT posits, simplified texts are artifacts not of the target culture, but of the classroom culture of the students' native language. Authentic Websites are social artifacts of the culture to which the learners want to gain access. Using "real" sites, written by native speakers of German for native speakers of German, also has the potential to genuinely engage students, as

they are motivated by this interaction with the culture as well as the language. Kern (2000) argues: “What seems to be more important than simplifying texts is structuring learners’ tasks and interaction to match their language abilities. Students need controlled tasks, not controlled texts” (p. 129).

From Strategies to Strategic Activity

Strategies research has received much attention in the fields of L2 reading and writing and foreign and second language instruction. Hosenfeld (1977) compared successful and unsuccessful second language readers. Her conclusions were based on analyses of students’ think-aloud protocols. The concept that different people or groups of people employ different strategies in their language learning prompted an interest in mapping types of strategies. Several studies attempted to establish taxonomies of learning strategies (Cohen, 1998; Hosenfeld, 1977; O’Malley & Chamot, 1990, Oxford, 1990). The most influential taxonomies are those by O’Malley and Chamot (1990), breaking strategies down into metacognitive, cognitive, and social/affective strategies, and by Oxford (1990), who classified learning strategies as either direct (memory, cognitive, compensation) or indirect (metacognitive, affective, social).

Following Hosenfeld’s orientation, researchers were interested in finding out how strategies use differed when successful and unsuccessful language learners were compared (Naiman et al., 1978; Rubin, 1981; Huang & Van Naersson, 1985). Differences in strategies use are both quantitative and qualitative as well as task dependent. In trying to explain why certain groups are “better” strategies users, individual learner differences

such as age, aptitude, motivation, and personality type are generally cited as influencing factors (Ellis, 1994).

The natural progression from the identification of learning strategies was the training of less successful language learners to apply strategies for greater success. Some studies found explicit strategy training to be effective (Cohen & Aphek, 1980; Flaitz & Feyten, 1997). Overall, however, research results are inconclusive. Research within traditional Second Language Acquisition has not been able to describe which combinations of strategies are most beneficial, and strategies training is also not fully understood (Ellis, 1994; Hoven, 1997).

The traditional strategies research reviewed so far has assumed that learning strategies are one aspect of individual learner characteristics (like cognitive style and learning preference). As Ellis (1994) pointed out, this research tradition has not yet explained the exact relationship between strategies use and language learning. This failure may be traced to a paradigm that views strategies as part of a learner's cognitive style or other personality factors (Donato & McCormick, 1994).

The case for reconceptualizing strategies from a sociocultural point of view is articulated in Donato and McCormick's 1994 article, "A Sociocultural perspective on language learning strategies: The role of mediation." They claim that strategies are part and parcel of goal-directed activity, but not a reflection of an individual's cognitive structure.

Instead, children and learners are acculturated into the social practices of the communities to which they belong. Donato and McCormick (1994) criticize traditional strategies research for focusing on static taxonomies of individual acts of learning and point out that traditional direct instruction of learning strategies has produced

inconclusive findings based in individual learner differences. They offer an alternative view of strategies:

Rather, the sociocultural perspective, informed by activity theory and the concept of mediation, maintains that the emergence of strategies is the by-product of goal-directed situated activity in which mediation through artifacts, discourse, or others plays a central role in apprenticing novices into a community of practice. Thus a closer look at what constitutes strategy training, in particular the type of mediation provided, is needed.

(p. 457)

They further propose that investigations should analyze “learners’ growing use of strategies during their language experience” and should “emphasize the classroom and the interactions that constitute it as the legitimate domain of study rather than the independent, solitary activity of the learner” (p. 454). The study presented here follows these guidelines.

Within the framework of Activity Theory (discussed in more detail further on), actions are strategic if they are used to accomplish a goal. Language learners have different goals at different times, and their primary goal is not always that of learning the foreign language. However, even if a particular student is involved in the activity of passing the class with the least amount of effort, he or she still acts strategically. The complex relationship between learner motive, goals, and behavior may account for the lack of generalizable research findings in studies not drawing on Activity Theory. Donato and McCormick (1994) argue that “invoking activity theory, therefore, enables more vigorous definitions of strategies that isolated labels can provide” (1994, p. 455). In

this framework, strategies are seen as situated in the activity rather than located in the brain. Strategies can be defined more completely because the learner's personal history and sociocultural context are included. To fully understand strategic activity, the authors claim that the analysis must include why particular strategies are used, how the learner is accomplishing the task at hand, and how the learning situation shapes the use of strategies.

More recently, Erben (2001) traced immersion student teachers' regulatory development by analyzing dialogic practices and identified instances of productive, constructive, and destructive collaboration. Patterns in the use of the strategic behaviors were linked to levels of regulation.

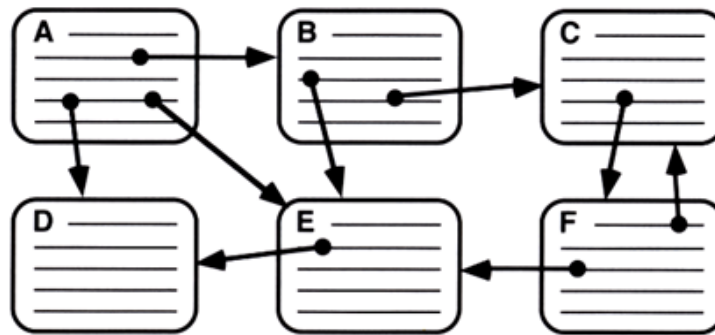
Reading Online Hypertext

Technologies influence literacy practices in complex ways. The advent of new mediums for reading, such as the Internet, necessitates new research directions. As mentioned above, Kern (2000) asserts: "Reading and writing with computers therefore adds layers of complexity to an already complex process" (p. 224). The following section explores this complexity as it relates to reading online hypertexts in a foreign language. Nielsen (1995) defines hypertext and its elements as follows:

Hypertext consists of interlinked pieces of text (or other information). The pieces are illustrated as computer screens in Figure [3], but they can also be scrolling windows, files, or smaller bits of information. Each unit of information is called a node. Whatever the grain size of these nodes, each of them may have pointers to other units, and these pointers are called

links....the entire hypertext structure forms a network of nodes and links. Readers move about this network in an activity that is often referred to as browsing or navigating, rather than just “reading, ” to emphasize that users must actively determine the order in which they read the nodes. (p. 2)

Figure 3. An Example of Hypertext



Note. Reproduced with permission from Nielsen 1995, page 2.

Recently, hypertext has become almost synonymous with text presented on the Internet since it is characterized by this kind of an organization. However, the word “hypertext” was coined by Ted Nelson in 1965 long before the advent of the Internet (Nielsen, 1995, p. 37). Hypertext has many applications, some of which will be briefly described in the following section.

Applications of Hypertext

The first real world hypertext application was an online computer manual that allowed users to jump to specific information within the entire manual through hyperlinks (Nielsen, 1995). In addition to manuals for all disciplines, CD-ROM based dictionaries and reference books were and are common applications of hypertext and hypermedia (using multimedia within a hypertext system). Most of these reference books were

converted from their traditional paper form into hypertext (Nielsen, 1995), which spawned a set of research projects investigating the optimal organization of hypertext systems.

In his historical overview of hypertext applications, Nielsen (1995) includes a section on foreign languages, in which he asserts, “The linking abilities of hypertext are ideal for the learning of foreign languages” (p. 103). In his view, characteristics which make hypertext useful are: access to dictionaries, viewing original and translated texts at the same time, displaying audio and video, controlling the speed of audio and video files, and role-playing simulations. Research into the “enhancement” of foreign language texts with hypertext and hypermedia has been conducted mainly by Dorothy Chun and Jan Plass (1996; 1997) and further investigated by Lomicka (1994), as well as Davis & Lyman-Hager (1997). This study focuses on online texts, or hypertext on the Internet. While these texts use links and images, they do not include modifications added specifically for foreign language learners.

Recently, online texts have been used increasingly for reading in professional, personal, and educational settings. The Internet can be useful in foreign language teaching because it provides seemingly unlimited access to authentic reading materials on virtually any topic. Every day the Internet is used by large numbers of people for reading the news, checking on weather conditions, finding information regarding a specific topic, shopping, and making travel arrangements. These types of reading correspond well to the cultural and thematic content covered in beginning language classes. Language textbooks generally include examples such as train schedules, weather maps, store advertisements, and newspaper clippings. However, these elements of realia are limited, static, and out-

of-date. The Internet has the potential to solve this problem. Students can access interactive weather maps, go on a virtual shopping spree, and plan a trip. Recognizing this potential of the Internet, many foreign language textbooks have started to include online reading activities in their ancillary materials. Teachers frequently create their own Web lessons that meet the specific needs of their classroom. One framework for creating pedagogically sound, motivating and challenging Internet activities are WebQuests (Dodge, 1997). WebQuests are tasks during which students access Internet resources in an inquiry-based framework. An introduction provides that problem to be solved or a reason for collecting information. An overview is provided in the Task description, whereas the process provides the resources and more specific questions and guidelines. Conclusions and Credits round out the task.

Differences between paper-based and electronic texts

Traditional print-based texts and electronic hypertexts are similar in some respects. Both are social artifacts used to “capture” language in a more permanent form. They also make use of combinations of words and images with which readers engage for various purposes.

However, electronic text, especially hypertext, is also quite different from paper-based text. The most common difference cited in hypertext research (Ganderton, 1999) is that paper-based texts are linear, while hypertexts are non-linear. Newspaper, however, demonstrates that such a claim is not valid. Few, if any, newspapers are read linearly from beginning to end. Readers might start by reading all the headlines on the cover page, then look at the pictures and their captions, glance at the sports section, read a

paragraph of several stories, and even read an advertisement. The organization of newspapers invites non-linear reading. By the same token, some types of electronic texts are, in fact, linear. One example is a research paper that has been formatted for the Web without adding any hypertext features such as links. The online research paper would probably not be considered a hypertext, but rather an electronic text. Most of the other differences between paper-based and electronic texts summarized in Table 1 hold true for what Nielsen calls hypertext, and especially for hypertext presented on the Internet.

Table 1. Differences between Paper and Electronic Texts

Paper texts	Electronic texts
Organized in continuous linear sequence of units	Often interconnected with other texts in a broad network
Static and self-contained	Dynamic and malleable Readers can adjust font size and face, spacing and line length Moving text is easy
Presented in discrete, rectangular blocks of writing, white margins, on pages Pages are bound and numbered	Virtual – viewed one window at a time
Immediate sense of length through thickness	Exact boundaries are unclear
	More integration of other media

Note. Adapted from Kern (2000, p. 224)

Online Hypertext Research Findings

Research studies in the area of online reading are necessarily more recent and smaller in number, even though this is certainly an area of interest in all education-related disciplines. Ganderton (1999) observes, "...there is a paucity of information and research

that documents exactly what reading strategies L2 readers exhibit when accessing text in electronic form, specifically through the hypertext medium of the Web” (p. 51).

Research related to optimizing the textual features of reading from computer screens has been mainly conducted with hypertext on CD-ROMs since readers on the Internet can determine font size, type, and page color based on their preferences via personalized browser settings (Godwin-Jones, 2000). Investigations into reading comprehension and strategies in first language reading have utilized CD-ROM-based encyclopedias or have manipulated the structure of CD-ROM-based expository text (McKeague, 1996). In foreign language learning, the effects of hypertext on reading comprehension and cognitive processes have been studied mainly with electronically enhanced CD-ROM or Web-based narratives (Hoffman 1998; Chun & Plass 1996, 1997; DeRidder 2000, 2002). However, texts created and enhanced specifically for the L2 reader are not culturally authentic. In addition, since they are time consuming and expensive to create and maintain, they do not fulfill the promise of the Internet as a virtually unlimited source for texts on virtually any topic, written in an increasing number of languages other than English.

These days, most hypertext reading occurs on the Internet, and it is thus surprising that there are not more studies in this area. Most articles, even in research journals, provide compilations of activities or advice for teachers on creating course-specific activities for various reading strategies (Walz 2001a, 2001b) or anecdotal reports of student attitudes, teacher work load, and classroom management when Internet activities are employed (King, 2000).

One study that provided inspiration for this investigation was conducted by Roger Ganderton (1999). Working with three dyads of high school intermediate learners of French as a foreign language, he utilized pair think-aloud to study the dyads as they read online. Through a qualitative design, Ganderton investigated the specific types of reading strategies employed by the students during two different online reading tasks: information retrieval and free browsing. During the information retrieval task, students were asked to find specific information regarding the weather from a French weather website. During the free browsing task, students were instructed to “surf” the Web according to their own interests. To ascertain how students went about these tasks, Ganderton utilized videoscreen recording, audio recording of participants’ discussion, and post-task interview. He investigated the interaction of student dyads rather than individual students because of methodological problems with think-aloud protocols, and claimed that this arrangement “gives a more naturalistic setting and creates a need for participants to justify or explain their ideas or actions, and therefore verbalize thought processes” (p. 54).

The six students participating in his investigation had volunteered and performed these tasks in the researcher’s office rather than in a classroom setting with the other students. Ganderton transcribed the data recorded during these tasks using Schifffrin’s (1994) two column technique: one column for video and one for verbal interaction.

Among his discoveries were some strategies that were specific to online reading: namely, using graphics, navigating with “Back” and “Forward, ” and scrolling and scanning. Risk taking and scope of pages visited were used as additional indicators of the online reading process. Comparing the information retrieval and the free browsing task,

Ganderton (1999) found that students engage in more risk-taking behavior (for example, clicking on icons and words even if they do not know exactly what they mean) during the more constrained task. During the free browsing task, students frequently experienced a lack of direction. Ganderton's findings seem to indicate that information retrieval tasks are better suited for beginning language learners.

Compared and Contrasting Cognitive Second Language Acquisition Theory and Sociocultural Theory of Learning

Traditional L2 reading research has focused on understanding the inner mechanisms of the brain. Research into reading processes and strategies has investigated individual, and usually singular, acts of reading. Some theories of learning hold that learning is inherently social, and that it does not make sense to study individuals in isolation. This is the tenet of collaborative learning and SCT. It is based on the view that "learning is acculturation into knowledge communities" (Oxford, 1997, p. 443).

Over the past years an increasing number of second language researchers and teachers have come to believe that language learning relies on social interaction and negotiation of meaning (Pica, 1987, 1991; Long, 1983). However, their constructs are framed within a transmission model of communication, which assumes that the only purpose of language use is to encode messages which are later decoded by the recipient. SCT challenges this view of language (Lantolf, 2000; Wertsch, 1985; Vypostky, 1978).

In comparison to cognitive theories of language, the sociocognitive model of L2 reading proposed by Bernhardt (1991) is more closely aligned to SCT. However, this theoretical framework is based on a different view of language and learning. Consequently, the connection between the social and the cognitive is viewed differently.

Before going into specific elements of the theory, this section will start out with a broad comparison of the underlying tenets of traditional Second Language Acquisition (SLA) and SCT. Table 2 compares some fundamental tenets of traditional SLA research and Second Language research with the framework of SCT.

Traditional SLA research is based on the Cartesian Dualism that posits a division of the body and the mind. Thinking and learning are activities of the mind and occur within the “black box” of the brain. SCT transcends this dualism and proposes a holistic view of human beings that sees social and individual as two sides of the same coin.

Table 2. Comparison of SLA within the Information Processing Model to Second Language Learning within SCT

SLA within Information Processing	Second Language Research within SCT
Cartesian dualism between the mind and the body	Transcending this division of the mind and the body by providing a holistic view of the social and the individual
Thinking and learning occurs in the “black box” inside the brain	Thinking and learning are first and foremost social and occur in human activity
Language is a vehicle for communication	Language is a mediational tool to transform the world and the self
Human beings are encoding and decoding linguistic messages	Human beings are involved in goal-directed activity aimed at controlling the outside world and the self
Interaction is seen as input/output of linguistic structures leading to cognitive change	Interaction is seen as the process and product of thinking and learning
Strategies are processes taking place in the brain	Strategic Activity is dialogic (both between and within people)

Table continued on next page

Table 2 (Continued)

SLA within Information Processing	Second Language Research within SCT
Strategies are part of an individual's cognitive "make-up"	Strategic Activity is part of enculturation into a community of practice
Strategies lead to learning	Strategic Activity is the process and the product of learning
Learning as progress towards a norm	Learning as development/transformation not towards a specific end-point
<i>Implications for Research</i>	
Individual's reading processes and strategies	Pairs or small groups involved in problem-solving activities
Deducing workings of the brain through self-reports: <input type="checkbox"/> Questionnaires <input type="checkbox"/> Introspection (think-aloud) <input type="checkbox"/> Retrospection	Understanding human activity through <input type="checkbox"/> Observation <input type="checkbox"/> Verbal interaction
Drawing inferences from statements to processes and strategies	The interaction itself is what is investigated
Pinpointing states at different points in time	Observing development (genesis)

Rather than regarding language as a vehicle for communication, SCT views language as a tool which humans use to transform the world and the self. From his studies on child problem-solving Vygotsky (1978) concluded:

- (1) A child's speech is as important as the role of action in attaining a goal. Children not only speak about what they are doing; their speech and action are part of one and the same complex psychological function, directed toward the solution of the problem at hand.

- (2) The more complex the action demanded by the situation and the less direct its solution, the greater the importance played by speech in the operation as a whole. Sometimes speech becomes of such a vital importance that, if not permitted to use it, young children cannot accomplish the task. (pp. 26, 27)

Interaction is thus more than encoding and decoding linguistic messages; it involves human beings in goal-directed problem-solving activity. While traditional research into learning strategies ties differences to the individual's cognitive dispositions, SCT claims that the way in which individuals act strategically has social roots in the way these individuals are acculturated. Learning is not seen as progress towards a norm, but as development.

The underpinnings of SCT affect research methodology in the following ways: 1) Investigations focus on pairs or small groups involved in problem-solving activities rather than on individuals; 2) Human activity is best studied through observation and analysis of verbal interaction during problem-solving tasks; 3) The focus of empirical studies should be on development over time.

Countering the Input/Output View of Language

Much of L2 research has investigated interaction as an important factor in language acquisition. Researchers in this paradigm (for example Long, 1983; Pica, 1987, 1991) rely on terminology such as “input, ” “output, ” and “negotiation of meaning” to talk about language, the purpose of language, and language learning. Underlying this choice of terms is the view of language as a means to exchange messages. Human beings

are seen as (or, in sociocultural terms “are reduced to”) complex computers processing communicative information. While SCT is also interested in the interaction between language learners, van Lier (2000) points out that “the nature of the role of interaction, or the precise way in which it relates to SLA, is interpreted in different ways by these perspectives” (p. 247).

Since meaning-making is fundamentally social in nature, the way interlocutors interact with each other in their attempts to act upon the world or each other is more than negotiating meaning; it is, in itself, constructing meaning. Donato (1998) articulates this argument as follows. Sociocultural Theory:

...argues for framing the study of L2 interaction in the message model of communication masks fundamentally important mechanisms of L2 development and reduces the social setting to an opportunity for “input crunching” (Donato, 1988). In the end, the social context is impoverished and undervalued as an arena for truly collaborative L2 acquisition. As Savignon (1991) points out, where meaning appears fixed, immutable, to be sent and received, what is lost is the collaborative nature of meaning making. (p. 34)

Within a SCT framework, language is thus no longer seen as the medium for transmitting messages from one brain to another, but as a mediational tool shaped by socio-historical influences and used by human beings to shape their environments. This shift in theory necessitates a shift in terminology and research methods. Researchers looking at interaction from a SCT perspective:

... would not approve of the continued use of the term ‘output’, claiming that it limits our understanding of second language learning to an information-processing perspective rather than permitting us to broaden the perspective to one in which all social activity forms a part of the learning environment. (Swain, 2000, p. 99)

Activity is thus seen as the context in which language mediates development of linguistic skills. The terms “input” and “output” are not used within SCT as the terms themselves are loaded in so far that they represent the conduit view of language. Instead, researchers in SCT refer to “utterances,” “dialogic engagement,” “mediation,” and “development,” as described in more detail in the sections to follow.

Sociocultural Theory in Second Language Learning

The following sections provide an overview of SCT implications and applications in Second Language Learning. Far from providing a complete introduction to SCT, the discussion will start with considerations regarding mediational tool use, specifically language as a mediational tool. Development through internalization and regulation as well as learning in the zone of proximal development will be outlined, before turning to applications of Activity Theory. Finally implications SCT for L2 reading research will be presented.

Language as a Mediational Tool

Human activity is aimed at controlling one’s physical environment as well as one’s own cognitive processes. “The tool’s function is to serve as the conductor of human influence on the object of activity; it is externally oriented; it must lead to changes

in objects. It is a means by which human external activity is aimed at mastering, and triumphing, over nature” (Vygotsky, 1978 p. 55). Vygotsky goes on to explain that in addition to the physical tools, psychological tools, or signs, while at times used to control other people, are also aimed internally to bring about changes in the cognition or behaviors of the self. Furthermore, Lantolf (2000) explains that the nature of the tools human employ in a given situation not only change the world, but also the self:

Vygotsky argues that just as humans do not act directly on the physical world but rely instead on tools and labor activity, which allows us to change the world, and with it, the circumstances under which we live in the world, we also use symbolic tools, or signs, to mediate and regulate our relationships with others and with ourselves and thus change the nature of these relationships. (p. 1)

Speaking is thus seen as human activity directed at changing the world or the self. Language learning falls within what Vygotsky called “higher order processes,” which are unique to human beings. Through observing very young children at play, Vygotsky and his students came to theorize that children talking to themselves while playing are not engaging in what Piaget (1952) called “egocentric speech” that simply accompanies activity without serving any function, but are rather mediating their activity through speech. Children initially “learn” to play assisted by the social talk of caregivers. Subsequently, they use language imitating social speech as a tool to help them play in the absence of the adult’s social speech. Ultimately, as the child gains control of the “game,” he or she is able to play without verbalizing. Lantolf and Appel (1994) describe this process as follows:

Vygotsky saw the transformation of elementary processes into higher order ones as possible through the mediating function of culturally constructed artifacts including tools, symbols, and more elaborate sign systems, such as language. Children learning to master their own psychological behavior proceed from dependency on other people to independence and self-regulation as a consequence of gaining control over culturally fabricated semiotic tools. (p. 6)

Finally, Swain (2000) makes the important observation that language “can be considered simultaneously as cognitive activity and its product” (p. 104). This last point is especially important since it highlights the function of language not simply as a medium for meaning transmission, but as an instantiation of cognitive activity. Thus, higher mental processes, such as language learning, can be investigated via collaborative dialog.

Internalization and Regulation

The notion that language acts as a mediational tool in the development of human beings is tied inextricably to the concepts of internalization and regulation.

The shift from the intermental to the intramental plane marks the beginning of the child’s control over his or her own behavior – that is, self regulation. The role of language in the appropriation process as the primary symbolic cultural artifact is critical. Thus, cognitive development is a question of individual children gaining symbolically mediated control

over, or regulation of, strategic mental processes. (Lantolf & Appel, 1998 p. 11)

All learning moves from the social (interpersonal plane) to the individual (intrapersonal plane). This process is also called “internalization” or “appropriation,” signaling the idea of “making it one’s own.” Processes and skills that have been internalized can be used in a self-regulated manner, which characterizes a mature member of society. However, all learning goes through three stages of regulation: object-regulation, other-regulation, and self-regulation. This process has been described by examples generally taken from mothers and children interacting in a problem-solving task (see for example Wertsch & Stone, 1985).

Development in SCT does not progress linearly towards an end-goal (for example, native speaker), and acknowledges that regulation is dynamic (Lantolf, 2000, p. 12). If a task becomes too difficult, even experts lose the ability to self-regulate and revert back to other- or even object-regulation in order to regain control. One example is the observation that during very demanding cognitive tasks, even skilled adults will “talk to themselves” to help themselves solve the problem at hand. They are using language as a mediational tool to regulate their learning. By working collaboratively on the computer, students are encouraged to engage in social talk as one mediational tool. It is expected that students will engage in more and qualitatively different dialog as they encounter obstacles during the collaborative online reading tasks.

Zone of Proximal Development

Vygotsky's sociocultural perspective (Vygotsky, 1978) proposes that humans learn through interacting with a more knowledgeable, more expert person. Warshauer (1997) summarizes this position as follows:

...collaborative learning, either among students or between students and a teacher, is essential for assisting each student in advancing through his or her own zone of proximal development, that is, the gap between what the learner could accomplish alone and what he or she could accomplish in cooperation with others who are more skilled or experienced. (p. 471)

The Zone of Proximal Development is such an important concept in SCT because it refutes a static view of learning. Rather than evaluating students' actual stage of development, or level of L2 proficiency, Vygotsky argues that what should be evaluated is their potential to perform with the assistance and guidance of a more knowledgeable peer. It is precisely through this engagement that the novice becomes able to perform independently and to develop an expert mediational system.

However, more recent investigations have discovered that peers are also capable of supporting each other's development through co-construction of meaning (Swain 2000). Donato (1988) goes so far as to claim: "Unlike group work, in which the more-capable instructs the less-capable, during collective activity perfect knowledge can be constructed by drawing on the impartial knowledge of all participants" (p. 298). Swain and Lapkin (1998) illustrated this argument partially by discussing how learners of French as a foreign language were able to scaffold each other in L2 writing tasks.

However, they also point out that the success and L2 development fostered through these types of collaborative writing tasks is not uniform for all students. Some learners seem to be more able to benefit from peer collaboration than others, which is also echoed by Erben (2001). The factors contributing to “successful” collective scaffolding in peer interactions are not yet well understood, but a number of research studies have started to explore the phenomenon of peer interaction specifically in language learning.

Activity Theory

The unit of analysis is an important theoretical and methodological foundation of a theory. This is a point of some contention within SCT. While Vygotsky (1962) initially favored word meaning as the appropriate unit of analysis his later writings and those of his follower Leontiev (1981) indicated a change in this position. For a discussion of this issue, see Wertsch (1985, pp. 184-208). This investigation follows, among others, Wertsch (1985), Lantolf and Appel (1994), and Lantolf and Pavlenko (2001) in using the activity as the unit of analysis. The following will provide a brief description of Activity Theory.

Activity is a term used on an everyday basis by language teachers as a synonym for task. However, this term needs to be revisited in order to understand Activity Theory from a sociocultural framework. Coughlan and Duff (1994) take the following approach in distinguishing between task and activity.

A task, we propose, is a kind of “behavioral blueprint” provided to subjects in order to elicit linguistic data....An activity, by comparison, comprises the behavior that is actually produced when an individual (or a

group) performs a task. It is the process, as well as the outcome, of a task, examined in its sociocultural context. Unlike a task, an activity has no set of objectives in and of itself—rather, participants have their own objectives, and act according to these and the researchers’ objectives, all of which are negotiated (either implicitly or explicitly) over the course of the interaction. (p. 175)

On a very basic level, Activity Theory is defined by the question: “What is the individual or group doing in a particular setting?” (Wertsch, 1985, p. 211). However, underlying this seemingly banal question lies a reconceptualization of the connection between thinking and doing. What humans do is not a result of what they think, and what they think is not a result of what they do. Activity Theory dissolves the Cartesian dualism of mind and body by arguing that “thinking is not the product of an *action* but the *action itself* (Spinoza, 1977 p. 35)” (Wertsch, 1985, p. 201). One can further develop Wertsch’s seemingly simple definition by discussing what he means by “doing” and by “setting.” First of all, “setting” does not refer to the physical environment, but to the sociocultural meanings assigned to the activity by the people involved in the activity. Examples of activities are play, formal education, and work (Wertsch, 1985). These appear to be bound by a physical environment, but they are, in fact, “the sociocultural interpretation or creation that is imposed on the context by the participant(s)” that determines the setting (Wertsch, 1985, p. 203). The context of education activity, for example, is not the building, the curriculum, the teacher, and the students. Within Activity Theory, the context is the sociocultural meanings assigned to these objects and to their relationship to one another.

To understand what Wertsch means by “doing,” it is important to examine all three levels of Activity Theory: activity, action, and operation (see Table 3) . Lantolf and Appel (1994) summarize: “The level of motive answers why something is done, the level of goals answers what is done, and the level of operations answers how it is done” (p. 21).

Table 3. An Overview of the Three Levels of Activity Theory

Level	Underlying concepts	Question being answered	Example
Activity	Motive	Why?	Education
Action	Goal and Subgoals	What?	Graduate with a B.A. Fulfill requirements Pass foreign language requirement Enroll in German 1
Operation	Conditions	How?	Go to class Do homework Participate in classroom tasks

Individuals engage in the activity of formal education with different goals. One conceivable goal is to graduate with a B.A. in a specific field. This goal encompasses a set of subgoals. For example, every major has a set of general and specific requirements that must be met before one can graduate. One of the general education requirements in most universities is passing a foreign language class. Consequently, the student in this example enrolls in German 1. To pass the course, this student attends class, participates in classroom tasks, does homework, etc. It is easy to imagine another student in the same German class who performs the same operations (specific mechanisms of carrying out goals), but with a very different goal—for example, planning an extended trip to

Germany. Even though the language teacher controls the tasks, the students control the activity in which they are engaged. Differences in motives and goals are not necessarily evident on the level of operation. In other words, students who perform the same operations do not necessarily share the same goal and motives, and the same goals may be instantiated in different operations by different individuals with different strategic behaviors. However, goals are not stable. Individuals can change or discard goals at any moment. The interwoven nature of activity, action, and operation lead to a myriad of combinations. Researchers can observe student behavior (operations), but this behavior cannot be removed from its context.

Activity Theory necessitates a research methodology that attempts to understand human mental activity in its natural environment. Learners are viewed within the context of their personal histories and in the specific context of the activity in which they are engaged. Thinking and doing are not separated from each other. Thinking and speaking are also closely connected. Verbal interaction during problem-solving activities can thus provide insight into the development of thought. Within L2 research, Donato (1998) claims:

Studies of verbal interactions in which participants are observed in the process of structuring communicative events jointly, and according to their own self-constructed goals, will provide important insights into the development of linguistic competence. The focus should be, therefore, on observing the construction of co-knowledge and how this co-construction process results in linguistic change among and within individuals during joint activity. (p. 39)

Within SCT little research has been conducted in the area of L2 reading. Applying the theoretical tenets to this activity, however, leads to some basic underlying constructs. Texts have no meaning without the context of human activity. As all human activity, reading is goal-directed (strategic) activity with the purpose of transforming the outside world or higher mental functions (such as thinking and learning). Any text is a social artifact, and its context is the activity of human beings who are reading it. Language is seen as a psychological tool that mediates humans' control over their environment and over their own cognitive development. Paraphrasing Vygotsky, Gallimore and Tharp (1990) posit the importance of reading in literate society as follows:

Extracting information from text, arraying and preparing it for weaving into existing cognitive systems are basic competencies that literate societies transmit. School-based instruction in comprehension of written text is our basic system for establishing the discourse meanings that create both the intermental and the intramental capacity for verbal thinking (Vygotsky, 1987). (p. 195)

While L1 reading research has more readily adopted SCT as a framework for literacy education (Cole & Engeström, 1993; Gallimore & Tharp, 1990; Smagorinsky & O'Donnell-Allen, 1998), few studies exist within SLA. Some research inspired by SCT exists in first language literacy. Smagorinsky (2001) argues that meaning is created in the transactional zone, as readers engage in "joint activity with mediational tools and signs, among them the signs of the text" (p. 137). Smagorinsky and O'Donnell-Allen (1998) investigated high school students' reading of *Hamlet*. Students created body biographies,

“a life-sized human outline that they filled in and surrounded with images and words that represented their understanding of a specific character” (p. 203). They concluded that this type of composing affected students’ meaning construction.

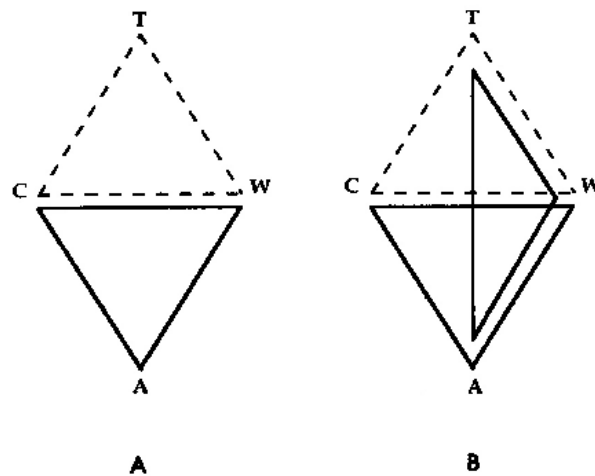
Cole and Engeström (1993) discuss L1 reading acquisition as an example of distributed cognition within an explanatory and research framework of Activity Theory. Rather than explaining the process of learning to read as the cognitive act of an individual child, they point out very clearly that it is the Activity System within which learning occurs that shapes the process. “The cognitive processing involved in learning to read is not an individual matter; the requisite cognitive processes are distributed among teacher, pupil, other students, and the cultural artifacts around which they coordinate in the activity called ‘teaching/learning’ to read” (Cole & Engeström 1993, 23).

All components of the classroom setting, such as mediating artifacts (text, blackboard, chalk, pencils, paper, etc.), the community (students and their teachers), but also rules and roles impact reading acquisition. It is only in the way these elements interact with each other and with the child learning to read that we can understand the process.

In the case of L1 reading acquisition, the child (C) has access to spoken language as a means to engage with others and to make sense of the world (W) via an adult (A), but they are not able to do so via the written word. The teacher, on the other hand, has a well-formed system that allows him or her to mediate interactions with the world, and other people, through text (T). In Figure 6, reproduced from Cole and Engeström (p. 24), the student’s situation is illustrated in the triangle formation A. Model B superimposes

the teacher's mediational system as a bridge between the students ability to interact with adults and its current insufficient ability to mediate the world via text.

Figure 4. L1 Reading Acquisition According to Cole and Engeström (1993, p. 25)



Note. C=Child, W=World; T=Text; A=Adult

Given the potential research that SCT has for advancing L2 reading research, it is surprising that, as of this date, few research studies have been conducted in this area., Appel and Lantolf (1994b), in their study comparing native speakers of English with advanced English as a Foreign Language students, found speaking to be a mediational tool for text recall, but did not focus on the L2 reading process itself. By engaging in private speech, students constructed meaning even in the absence of the source text. Development of grammatical competence has been investigated by Swain and Lapkin (1998) and Swain (2000). Within writing, DiCamilla and Anton (1997) and Anton and DiCamilla (1998) have investigated the role of repetition and student's native language. Donato (1998) investigated mutual scaffolding planning sessions for oral presentation.

Strategic activity through portfolio assessment has been outlined by Donato and McCormick (1994).

The study described here, thus, starts to fill this gap by focusing on the relationships between two students reading together on the Internet. Through examining students' interaction during collaborative online reading tasks, this study begins to glean insights as to how L1 and L2 are used in strategic behaviors and how this use changes over time.

Studying Reading Processes – From Introspection to Collaborative Dialogue

Reading and learning strategies research is faced with uncovering why students do what when. This section will describe research methodologies used in understanding the reading process in its broadest definition. First, introspective methods are reviewed. This methodology collects verbal reports of individual readers during or after reading tasks, which are analyzed via protocol analysis. Ultimately, however, the use of collaborative dialog during pair problem-solving provides “better” data and is a methodology more commensurate with SCT.

Studying the processes and strategies of reading requires a unique set of methodologies. By merely examining reading comprehension, it is impossible to deduce the reader's cognitive processes: *how* he or she went about the process of creating meaning based on the cues provided in the text. Færch and Kasper (1987) call this the “ambiguity of product and process” (p. 9). They describe this problem as follows:

Reconstructing unobservable phenomena from performance data will always entail situations where the ambiguity between product and process

cannot be solved. Looking for methods that provide a more direct access to learners' process and knowledge, SL researchers have found help from the disciplines whose empirical methodologies have traditionally been a significant source of inspiration for SL research: linguistics, sociology and psychology. One common denominator for the methods in question is that they use as data, informants' own statements about the ways they organize and process information, as an alternative or supplement to inferring their thoughts from behavioural events. (p. 9)

Within traditional reading strategies research, the goal is to gain access to cognitive processes. Cognition is viewed as a property of the individual's brain and thus obscured from observation. One alternative is offered by verbal reports and protocol analysis used in introspective methods. In their 1987 book *Introspection in Second Language Research*, Færch and Kasper give a comprehensive overview of these methods in the field as a whole, and Peter Afflerbach discusses contributions of this methodology, as well as the controversy surrounding it, in his chapter in the 2000 *Handbook of Reading Research*. Ericsson and Simon's 1993 book *Protocol Analysis: Verbal Report as Data* offers an in-depth and critical discussion of this methodology. It is thus evident that this type of data elicitation is well established in the field of reading research. First, advantages and disadvantages of this approach will be briefly outlined; then the use of collaborative dialog in conjunction with analysis of episodes is suggested as a preferred methodology.

Afflerbach and Johnston (1984) summarize potential advantages of verbal protocols and protocol analysis based on an earlier work:

First, they provide access to the constructive and responsive processes that comprise reading, this information is accretive to our understanding of the complex constructs of cognition and response that might otherwise be investigated in an indirect manner. Second, protocol analysis allows for the examination of important but often neglected reader characteristics, including motivation and affect. Moreover, protocol analysis may explain the relationships and interaction of motivation and affect with cognitive processes and responses. Third, protocol analysis allows for the examination of the influence of contextual variables (e.g., text, task, setting, reader ability) on the act of reading. Finally, protocol analysis provides valuable information on a range of processes related to reading, such as instruction, assessment, discussion, and teacher decision making.

(p. 89)

Introspective reports can be elicited *simultaneously* to the action (think-aloud protocols), immediately after the action (recall right after completing a task), or delayed (some time after the task). Færch and Kasper (1987) point out that an important factor to consider when using introspective methods is training. Even though most people are able to provide immediate recall of cognitive activities without training, for simultaneous introspection it might be beneficial and necessary to “accustom informants to verbalize while carrying out a task” (p. 16). Introspection can be either prompted by the researcher or continuously produced by the informant without additional prompts. Interaction between informant and experimenter, or between informants, is also a variable that can

affect the data. The experimenter's influence is smallest if the informant recalls in a diary or thinks aloud continuously during the experimenter's absence. Even then, the knowledge that another person will listen to or read the verbalized thoughts might alter the informant's statements. In addition, for most people, it is not natural to verbalize all their thoughts. Interviews and experimenter-prompted thinking aloud protocols suffer from an even larger impact of experimenter influence (Færch & Kasper, 1987 p. 18). A review of relevant literature found that, by far, the most frequently used method of eliciting introspective reports from foreign language learners is simultaneous, continuous thinking aloud, which is usually audio-taped in the absence of the researcher and transcribed for later analysis (Cohen, 1998).

While the development and use of these methods have contributed to the improved understanding of the reading process and reading strategies, they have also been criticized in recent years. Introspective methods such as think-aloud and recall interviews have been subjected to criticism in which their validity is questioned (Ellis, 1994; Haarstrup, 1987; Goss *et al.*, 1994; Swain and Lapkin, 1998; Grabe and Kaplan, 1996). Most of these criticisms point to the artificiality of verbalizing thoughts while engaging in a cognitively demanding task such as reading in a foreign language. Another line of criticism questions whether informants are capable of knowing and expressing their thought processes – even if they are trying to be truthful. For foreign language learners, these problems are confounded by the added cognitive demand of trying to express themselves in a language other than their mother tongue, which is why these types of data are often collected in the native language of the learners. Table 4 summarizes problems related to the traditional introspective methods of thinking-aloud

and recall. It is based on a similar table created by Haarstrup (1987, p. 208), but information from other sources has been added where noted.

Table 4. Problems with Individual Introspective Methods

Method	Potential Problems
Thinking-aloud protocol	<ol style="list-style-type: none"> 1. Informants' focus in on the product 2. Informants do not know what the researcher wants 3. Socio-psychological variables interfere with cognitive variables 4. Informants cannot communicate their thoughts 5. Cognitive overload is possible (Zamel 1983) 6. L2 learners cannot express their thoughts in the L2 (Grabe and Kaplan 1996) 7. Experts might not report what they did, but what they used to do before processes were automatized (Goss et al. 1994) 8. Humans can focus on one cognitively demanding task at any one time. When the task becomes difficult to process, thinking-aloud usually ceases (Goss et. al 1994)
Retrospection	<ol style="list-style-type: none"> 1. Informants' awareness of their own thought processes is low 2. Informants cannot communicate their thoughts 3. Informants' lack of confidence and extroversion influences the quality and quantity of the data 4. Informants have forgotten what they were thinking during the activity 5. Informants' utterances have been influenced by reaction from others

Note. Adapted from Haarstrup (1987, p. 208)

In summary, while verbal reports and protocol analysis are useful tools in understanding reading processes and strategies, reasonable doubt has been established concerning the validity of individual introspective methods, such as think-aloud protocols. From a theoretical point of view, it is also important to emphasize that these methods are based on the notion that learning is fundamentally individual and takes place within the brain. The remainder of this section illustrates how collaborative dialog provides a solution to the methodological problems inherent in introspection.

Collaborative dialogue within an SCT framework opens up new doors for the investigation of thinking and learning. While think-aloud protocols and retrospective interviews are generally conducted during individual reading, writing, or problem-solving activities, some researchers have suggested that cognitive processes may be better studied by examining interaction during collaborative tasks. Pair thinking aloud has been suggested by Haarstrup (1987). Ellis (1994) also mentions it as a methodology to investigate learning strategies. Haarstrup has researched inferencing procedures in reading comprehension, and concludes:

Pair thinking aloud was preferred to individual thinking aloud on the following grounds: by using pairs, one stimulates informants to verbalize all their conscious thought processes because they need to explain and justify their hypotheses about word meaning to their fellow informant. It is hard to imagine that a setting with one informant thinking aloud for the benefit of a tape-recorder would have elicited protocols that were as informative as the ones based on pair work. (p. 202)

Goss et al. (1994), speaking from a sociocultural view of learning, suggest that “talk spontaneously generated by individuals in collaborative problem-solving offers a window into intramental processing” (p. 266). It is thus more natural to express one’s thoughts while in the presence of a co-learner, and the ensuing interaction provides insight into the learning process.

Swain and Lapkin also propose a research paradigm and approach to studying mental processes compatible with SCT in their 1998 article “Interaction and Second Language Learning: Two Adolescent French Immersion Students Working Together.”

They were not satisfied with the think-aloud methodology, and, thus, adopted the methodology from Goss et al. (1994), which is based on collaborative problem-solving. Swain and Lapkin concurred with Goss *et al.*'s conclusion that the language produced during collaborative dialog for problem-solving represents cognitive activity. In other words, studying the interaction of students working together cooperatively makes it possible to analyze their thought processes. Since students have to solve a problem together, instead of keeping their thoughts to themselves, they verbalize them to their partner.

In Swain and Lapkin's 1998 study, each dyad was given a set of numbered pictures that told a story (each member received half of the pictures). The task was to work out the story and write it down. The unit of analysis used in this study was the Language Related Episode (LRE), which can be either form-based or lexis-based. Lexis-based LREs focus on seeking vocabulary items and choosing among several alternatives, while form-based LREs focus on spelling, morphology, syntax, or discourse (p. 326). As part of the task, each student-pair produced a written story, which was rated for content, organization, vocabulary, morphology, and syntax, each on a six-point scale. The researchers also counted the number of idea units produced and the time on task. From their research on grammaticality judgments (the main focus of their study), Swain and Lapkin concluded that collaborative problem-solving is indeed an occasion for language learning, since students remembered their negotiated answers.

This study adopts the collaborative dialog aspect of their research methodology, since research framed in SCT has also generally focused on pairs or groups of people

involved in goal-directed (strategic) activity. The research presented herein follows this well-established path.

Summary

The review of literature has provided an overview of the accomplishments and shortcomings of traditional research into second language reading and learning strategies. While an SCT theoretical as well a methodological framework has been discussed as it related to both L1 reading and L2 writing and speaking, this study focuses the lens on L2 reading development. In addition, in light of recent technological advances in terms of Internet uses in education, the importance of studying online reading processes has been illustrated. The following chapter will explicate the concrete methodological aspects of this study as mediational tool use and strategic behaviors are explored during collaborative reading tasks via a microgenetic case study.

Chapter III Method

The research methodology, like the data and participants, is not neutral, but rather tied to the research questions posed and the theoretical underpinnings of the investigation. Seliger and Shohamy (1989) point out that all salient research features, such as the setting, the research paradigm, and methods of data collection are influenced by the questions under investigation and the researcher's theoretical and philosophical orientation. The research questions as defined in chapter I target language learning processes embedded in their naturalistic classroom setting. As discussed in chapter II, SCT and Activity Theory are employed as the framework for understanding the complex relationships between mediational tool use, peer-peer interaction, and foreign language reading development. In this chapter the research design as well as data collection, management, and analysis will be outlined.

Microgenetic Case Study Design

While the use of SCT has led to significant advances in the study of second language writing and planning, applying it to L2 reading and, more specifically, to collaborative online reading, represents an expansion into processes that are not well understood at this time. As has been stated previously, the theoretical underpinning of this investigation is SCT, which stresses the importance of studying real people in naturalistic settings. The ways in which students use mediational tools such as language in problem-solving activity are complex, and it is impossible to understand their activity

without identifying the students' goals and motivations. Since learning is more a process than an outcome, it is crucial to observe the learning process from the perspective of those involved. Moreover, Activity Theory informs us that the involvement in the activity is the process and the product at the same time. Thus, a case study methodology was used to investigate the complex phenomenon of collaborative online reading. Such an approach provides the tools to glean new knowledge about the process of collaborative online reading. According to Gillham (2000), qualitative methods enable investigators among other things:

...to investigate where little is known about what is there or what is going on....to explore complexities that are beyond the scope of more 'controlled' approaches... to view the case from the inside out: to see it from the perspective of those involved....to carry out research into the *processes* leading to results. (p. 11)

Qualitative research provides the lens through which we can begin "to gain a holistic (systematic encompassing), integrated view of the context under study" (Miles & Huberman, 1994, p. 6). The context being investigated in this case is that of mediational tool use, strategic behavior, and patterns of dialogic engagement of beginning German as foreign language students completing collaborative online reading tasks.

As explicated in the Review of Literature, research grounded in SCT oftentimes analyzes verbal interaction in small groups or pair problem-solving activities. The process is viewed holistically in the context of the individual involved. Students, teachers, classrooms, and even tasks themselves exist in the socio-historical context

through which they are defined. While quantitative studies attempt to control for learner differences, the case study design lends itself to understanding individuals in their social context. Qualitative in-depth analysis of the strategic activity during collaborative online reading tasks makes it possible to explore the complexity of the reading process as students engage in it with the help of mediational tools, such as their linguistic resources, their peer, the computer, and the teacher. Emphasizing the development of tool use and dialogic engagement, this study falls within the microgenetic domain of human development. In contrast to ontogenesis, which refers to the development from child to adult, microgenesis is concerned with moment to moment changes as those occurring in learning. Donato (1998), studied collective scaffolding during L2 planning sessions and asserts: “A microgenetic analysis allows us to observe directly how students help each other during the overt planning of L2 utterances and outcome of the multiple forces of help as they come into contact, and interact, with each other” (p. 42). The same concept is applied to this analysis of student working jointly on online reading tasks. Donato (1998) further explains:

...what we call learning and cognition is a complex phenomenon. If this is so, studies of verbal interactions in which participants are observed in the process of structuring communicative events jointly, and according to their own self-constructed goals, will provide important insights into the development of linguistic competency. The focus should be, therefore on observing the construction of co-knowledge and how this co-construction process results in linguistic change among and within individuals during joint activity. (p. 39)

A review of the research methodologies employed in the three seminal compilations on SCT and Second Language Learning, (Lantolf, 1994; Lantolf & Appel, 1998; Lantolf, 2000) found a case study design focusing on microgenetic development to be pervasive. For example, Ohta (1994) conducted a case study of three effective and ineffective language learners. Donato and McCormick (1994), observed strategic activities in language learning among 10 5th semester French students in a classroom based study. Ahmad (1994) reported on the discourse of two student dyads engaged in picture description tasks. Finally, Erben (2001) employed a case study design to investigate Japanese immersion teacher education.

In keeping with qualitative and sociocultural research, this investigation is conducted within a hermeneutic (interpretive) research tradition acknowledging that neither data nor the researcher are neutral elements of research. Rather, “Data are social constructs developed through the relationship of researcher, research participants, research context, and the means of data collection” (Smagorinsky, 1995, p. 192).

As the classroom teacher in the study described herein, the investigator is not neutral to the activity in the classroom; instead, she is a participant observer. Since she also functions as a contextual resource accessible to the students during the collaborative online reading tasks, she is one of the elements constructing the classroom activity. Just like the students participating in this investigation, she is an individual with a personal history. The different roles she assumes—for example, doctoral candidate, teacher, researcher—are constructed in the socio-historical contexts of education and scientific enquiry. As Gall, Borg, and Gall (1996) point out: “The role of a case study researcher is more complex. The researcher is the primary ‘measuring instrument’. This means that she

becomes personally involved in the phenomenon being studied” (pp. 553-554). The researcher acknowledges that role and perceives it not as a vulnerability of the research design, but rather as a natural marriage of teaching as research and research as teaching.

The teacher/researcher conducting this investigation is a native speaker of German who was a teacher education student for the subject English as a Foreign Language and Physical Education in Germany before pursuing undergraduate and graduate degrees in the United States. She was conducting the research for the completion of her Ph.D. in Second Language Acquisition and Instructional Technology. At the time of data collection she had taught the first semester German class three times in addition to various other teacher teaching assignments in GFL, English as a Second Language (ESL). In the classroom she focuses on fostering a community of learners engaged in authentic language learning opportunities.

Setting

All study-related elements were integrated into the structure of the section of Beginning German 1 (GER1120) taught by the investigator during Spring 2003 semester. The German section of the foreign language department is very small, which means that during the Spring semester only one section of Beginning German 1 is offered at the university in question. Most students who register for this particular class are fulfilling their one-year foreign language requirement for graduation.

In accordance with the departmental philosophy, the class is taught with a communicative orientation towards language learning. Consequently, the focus is on oral skills (listening and speaking). The textbook *Kontake* was selected by the faculty of the

German section of Department of the World Language Education for its communicative orientation. Even though grammatical content is presented and practiced during teacher-fronted segments, pair and group activities are conducted during each class period. Students frequently move around the classroom, engage in information gap and jigsaw activities, prepare skits, or produce posters for short presentations. In addition to written examinations, students' oral proficiency is evaluated via two oral exams, consisting of individual as well as partner situations. Additional information regarding course policies, grading, etc. are articulated in the syllabus provided in Appendix A.

The semester overview presented in Table 5 was distributed to students at the beginning of the semester to inform them of the overall course plan. The course structure was largely determined by the six exams, conducted roughly every two weeks. Each exam covers one chapter in the textbook, except for the first examination, which tests students on two preliminary chapters, which are covered in a three-week period. The WebQuests were designed based on the lexical, structural, and cultural content presented to students during a particular course segment and were conceptualized as culminating activity that would allow student to engage with content in a meaningful way. They were scheduled after presentation of chapter content had concluded, but before the written examination. Ideally, WebQuests would have been conducted two days before the exam in order to allow for discussion and feedback on the Wednesday before the test, but because of a holiday during week three, WebQuest 1 fell on the day immediately before Exam 1.

At the time of data collection, the instructor had taught this particular course three times. In addition to focusing on listening and speaking skills, she had made an attempt to

incorporate a larger amount of reading and writing into the curriculum. The Internet was used as a source for linguistically and culturally authentic German texts and information, and as a medium for communication as well. WebQuests were identified as a type of activity that would not only integrate listening, speaking, reading, and writing skills but also cultural content.

Table 5. Semester Plan

Week	Monday	Tuesday	Wednesday	Thursday
1				
2				
3	Holiday		WebQuest 1	Exam 1
4				
5				Exam 2
6				
7		WebQuest 2		Exam 3
8		Oral Exams	Oral Exams	
9	Spring Break			
10		WebQuest 3		Exam 4
11				
12				Exam 5
13		Oral Exams	Oral Exams	
14				
15				Exam 6

Participants

After the Drop-Add period, 20 students remained in the section of GER1120 taught by the investigator. The class comprised nine male and eleven female students from 18 to 32 years of age. The average age of the entire class was 20.95 years. Seventeen students grew up in monolingual English speaking households, one student in

an English and Spanish speaking family, one student in an English and Korean family, and another student was a native speaker of French. The class was heterogeneous in terms of German language proficiency, which ranged from no prior exposure to several years of study in high school or several years of living in Germany. The ethnic composition of the class was also heterogeneous, which is typical for the large institution.

All 20 students agreed to participate in the study and completed the Background Questionnaire, which was distributed during class time. One student dropped the course before the first task, and three dyads were dropped due to incomplete data sets brought about by student absence during WebQuest days or by technical problems during the first task. In all, six dyads completed all three WebQuests. While some minor technology problems occurred during two of the recordings in Task 2, data from the six dyads were included in the data analysis.

The average age of the 12 students (six male and six female) remaining in the study was 21.75 ranging from 19 to 32 years of age. Five of these students were identified as beginning students of German, while seven students had prior German experience. Eleven of the participants had grown up in a monolingual English household, but one was a native speaker of French who had also lived in Germany for some time. Each student is identified by their first name initial and dyads are labeled by combining the two letters.

Procedure

Data were collected throughout the Spring semester (see Figure 5). During the first week of classes, informed consent was obtained from students enrolled in the course.

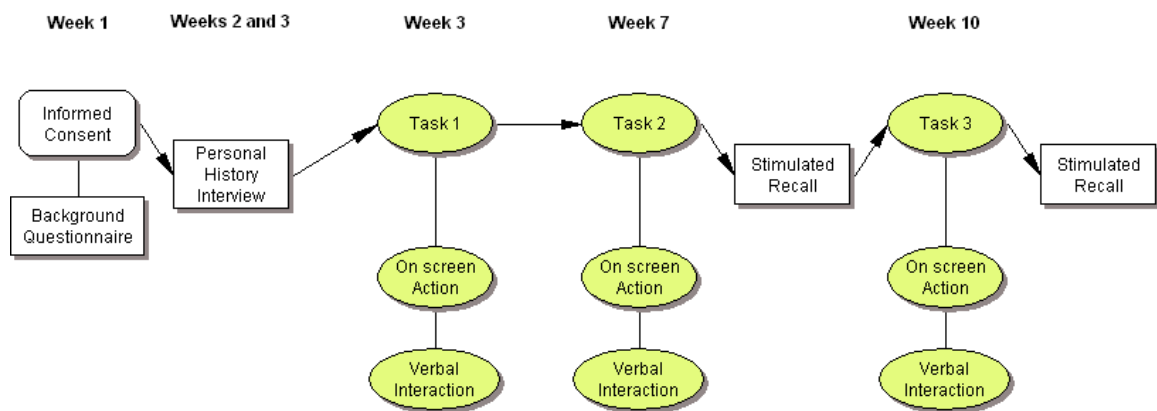
Students also filled out the Background Questionnaire (*Fragebogen*) during one of the class sessions in the first week of classes. Personal History Interviews were conducted during the second and third weeks of the semester before the first collaborative online reading task. A semi-structured interview format was selected in which the researcher prepared a list of questions ahead of time (see Appendix C), but was open to asking flexible follow-up questions depending on the conversational flow. Due to scheduling difficulties, some students completed the Personal History Interview at a later time. One student did not meet with the investigator for the interview. Because the investigator was also the instructor for the course, and in order to ensure that the research activities would not interfere with students' performance in the course, students were reminded twice to sign up for an interview; however, if they chose not to do so, no additional attempts were made to coerce cooperation. Another interview was lost due to technical problems during the recording. Nonetheless, failure to be interviewed did not result in the elimination of student from the study. The interviews of 10 of the 12 students included in the data analysis were tape-recorded, and an interview protocol was used to record the informants' reasons for taking German, reading preferences, Internet usage, and collaborative learning experiences.

As indicated above, WebQuest 1 (also referred to as Task 1) was conducted during the third week of classes just prior to the first examination of the semester. By this time students had already engaged in several pair or small-group tasks during classroom activity, so they were able to choose a partner based on prior collaborations. Thus, on the day before the first collaborative online reading task, students indicated the names of their partners to the teacher via a sign-up sheet. This information was used to arrange the

computer lab and to match the recordings to the dyads. Since the computer lab was in a different building than regular class sessions, the investigator reminded the students to meet in the new location and gave oral directions to locate the building and classroom.

During all collaborative online reading tasks the class met in this computer lab where each student dyad worked collaboratively on the same Internet-connected computer. During all three tasks, students' on-screen actions and verbal interactions were recorded via a full-motion screen capture software program.

Figure 5. Overview of the Data Collection Procedure



A first set of Stimulated Recall Interviews was scheduled with a subset of dyads after the completion of the first two tasks in order to examine the students' perspective on their strategic behaviors and collaboration. A second set of Stimulated Recall Interviews was conducted with the six dyads that had completed all three tasks towards the end of the semester. However, two students from two different dyads were not available to participate, resulting in two individual sessions.

Measures and Instruments

As mentioned earlier, within the case study method, the teacher/researcher is the primary instrument. The investigator is both participant observer and instructor. Though it is not possible to standardize all aspects of data analysis before the fact (Gall, Borg, & Gall, 1996), the data collection was carefully planned and executed via a variety of methods. Some of the data were collected via a questionnaire, a semi-structured individual interview, and open-ended retrospective interviews, which allowed students to self-report. However, the most substantial data were collected via screen and audio recording during the three collaborative online reading tasks (see Table 6). Each of the instruments is described in more detail in the following sections. In order to answer each of the three research questions data from at least two of the instruments were considered to establish triangulation of data sources.

Table 6. Overview of Instruments

Instrument	Data collection	Data generated
Background Questionnaire	Paper-pencil	Demographic information
Personal History Interview	Audio recording Interview protocol	Learning, reading, and computer experiences
3 Collaborative Online Reading Tasks	On-screen action recording Audio recording Transcription	Mediational tool use, strategic behavior, and interactional patterns
Stimulated Recall Interviews	Audio recording Transcription	Verification and clarification

Note. *Data collection* refers to the manner in which the data were collected and prepared for analysis. The last column lists the data generated by each of the instruments.

Background Questionnaire

The general questionnaire about language background and reasons for studying German was similar to information questions the researcher routinely asked of her students at the beginning of the semester. The instrument was presented in a paper-and-pencil format and was completed during class time in the first week of the semester. A questionnaire was employed as a time-effective means to gather fairly objective information. The Background Questionnaire for this study was adapted from Oxford's Strategies Inventory of Language Learners (Oxford, 1990). It is used to collect demographic and language background information, as well as reasons for studying German (Appendix B). These types of questions are asked in almost all foreign language and second language acquisition research, as they offer an efficient way to collect basic personal information relating to the students as language learners.

The strength of this investigation lies in the use of a multitude of naturally occurring pairings rather than in any attempt to create pairing based on a priori characteristics. This research focused on the development of mediational tool use as strategic activity, and obtaining data from a variety of student dyads over time adds to the transferability of the results. Following recent research grounded in SCT (Erben, 2001; Storch, 2002), the nature of interaction in pairs and small groups was discussed in terms of dialogic engagement.

From the 20 students who were enrolled in the section of beginning German 1 taught by the investigator during the Spring semester, a complete set of WebQuest data was collected from six dyads (12 students). As stated earlier, the dyads were self-selected during Week Three of the course, prior to the first task. One interesting case was that of

R/T, who were originally paired with different students. Both students were initially paired with students who were absent during the first task. Consequently, at the beginning of the first task, neither R nor T had a partner. Rather than working individually, they decided to work together during first task and continued working as a pair for the remaining tasks. This course of events should be taken into account when looking at the results, but removal of R and T's data from the analysis was not warranted. This represents an example of the kind of natural occurrences which are common in a college classroom.

Personal History Interviews

Within the framework of SCT, it is important to see each student in the context of his or her personal history. To get a sense of each student's history as a learner, reader, and Internet user, the investigator conducted a semi-structured one-on-one interview with each student during the second and third weeks of the semester. The interviews were scheduled at times convenient for the students and were conducted in a conference room. They were tape-recorded, and information was entered into an interview protocol table.

A semi-structured interview format was selected in order to allow for a more in-depth and open-ended discussion of students' prior experiences as learners, readers, and computer users. Each student was asked the same set of open-ended questions. However, follow-up questions differed depending on the responses provided by students. Questions related to previous learning experiences, reading proficiency and habits, Internet use, and experience with collaborative learning appear in Appendix C. Experience in any of these areas has the potential to change a student's ability to use the mediational tools available

to them during the collaborative online reading tasks. The Personal History Interview, thus, provided background information that informed the explanations of mediational tool use, strategic activity, and interaction pattern.

Collaborative L2 Online Reading Tasks

For each of the three tasks, the class met in the same computer lab. The first time that the class met in a computer lab was for the first collaborative online reading task during Week 3 of the semester.

Studies on collaborative writing have found training to be an important factor in the success of peer-editing activities. However, SCT values enquiry into naturally occurring problem-solving activities, and training alters the process. Since the exploratory phase into strategic activity in collaborative online reading tasks has just begun, what happens without explicit training is especially valuable. Consequently, prior to the tasks, the students in this study received no training in collaborative learning or in using the computer. Lantolf (2000) points out:

Vygotsky suggested that researchers abandon pretraining periods, and provide subject with minimal instructions accompanied by some auxiliary means (that is, mediation) to help them carry out a task. By observing precisely how subjects integrate the auxiliary means into the task, including linguistic signs, the process under investigation is brought to the surface and made observable. (pp. 25, 26)

Each task was designed to be completed within approximately 40 minutes, but it was expected that some students would finish more quickly than others. The majority of

students did not complete certain task elements, namely those involving posting their results to the electronic bulletin board and compiling information gathered by the other students. These components were ultimately excluded from the data analysis. Each pair worked collaboratively on the same computer and without predetermined roles (for example, who controlled the mouse and who typed the answers). All tasks involved predicting, finding and evaluating information, sharing findings with classmates via an electronic discussion board, and summarizing information gathered by all students in the class.

Each of the three tasks was patterned after the WebQuest template (Dodge, 1997). The elements of a WebQuest are: introduction, task, process, evaluation, conclusion, and credits and references. Since the only criterion used for class evaluation was task completion, this format was altered by omitting the evaluation section. In addition, rather than being presented as an HTML document, the WebQuests were presented to students as a Microsoft Word document including form fields for student answers, which students downloaded from the course's Blackboard site at the beginning of the class period. The WebQuest itself served as the worksheet which was printed out by the instructor and returned during the next regular class session. From a data collection standpoint, this made it possible to observe how the students interacted with the digital worksheet itself as well as with the Web resources they used to find information. The electronic discussion board built into the Blackboard system was used to share the findings with the other students.

Since participants in this study were expected to be in the very beginning stages of learning German, the introduction, task, conclusion, and credits and references were

presented to them in English. The process, which provides specific instructions, questions, and resources, appeared in German. The German Websites utilized during the task were selected by the instructor based on content, as well as linguistic and cultural authenticity. In order to observe the development in the dyads' strategic activity, the tasks were increasingly difficult as students were exposed to new linguistic content.

The WebQuests were based on grammatical and cultural information embedded in the thematic units presented in the textbook *Kontakte*. Table 7 illustrates the grammatical and cultural content of each of the three tasks as well as the increasing level of complexity. Each WebQuest consisted of a number of task elements which students were required to negotiate in order to successfully complete that task. However, it was anticipated that certain students would complete the task, while other dyads would not be able to do so during the allotted time. Consequently, each WebQuest ended with an information sharing and summarizing activity designed for those students who finished before their peers. Each task and its components are described in more detail in Tables 8, 9, and 10.

Table 7. Overview of Task Content

WebQuest	Chapter	Content
<i>Das Wetter</i> (The Weather)	Introduction B	Weather vocabulary including verbs and descriptive adjectives
<i>Einkaufen</i> (Shopping)	Chapter 2	Articles of clothing, furniture, numbers Accusative case Expressing opinions (descriptive adjectives)
<i>Wir Planen eine Reise</i> (Planning a Trip)	Chapter 3	Leisure activities Modals and modal word order Subordinating conjunctions clause word order

WebQuest 1, “*Das Wetter*” (the weather), which is reproduced in Appendix D, related to weather information—this topic is introduced in *Einführung B*, the second of two introductory chapters. After conversing about good and bad weather, students were asked to predict where in the world the weather might be good and where in the world the weather might be bad on that day. A link to the German Yahoo! Weather site was provided to the students to help them verify their predictions. After retrieving this weather information students wrote weather reports that were shared with the rest of the class via an electronic discussion board. Finally, students compiled a weather table based on the other students’ weather reports. Table 8 provides an overview of the various elements of the task.

Table 8. WebQuest 1 (Weather) Overview of Task Components

Component Label	Description of Successful Completion
Enter good and bad weather	Student talk about what they consider to be good and bad weather conditions and enter the characteristics into a table. Students were not expected to answer in complete sentences, but rather to use keywords such as <i>sonnig</i> (sunny), <i>kalt</i> (cold), <i>schwül</i> (muggy), etc.
Understand that they need to predict	Students were asked to predict a city where they thought the weather would be good and one city where the weather would be bad. The German instructions included the verb <i>denken</i> (to think), which was unknown to the students.
Good Weather	
Testing predictions: good	Students access a German weather site to look for the city where they had predicted the weather would be good according to the characteristics determined in the previous step. Students could use either the search function or navigate through a hierarchical structure to the location. Place names are sometimes different in German and English, for example: Nice is called Nizza in German. The day of the WebQuest most of the world seemed to experience bad weather, and most students spent a considerable amount of time searching for good weather

Table continued on next page

Table 8 (Continued)

Interpret weather information	Students had to evaluate the weather information provided on the site to see if it matched their definition of good weather. This was generally facilitated through visual information.
Temperature	The German weather site lists temperatures in Celsius rather than Fahrenheit.
<i>Wirklich</i>	Students are asked whether or not the weather is really (<i>wirklich</i>) good. This is an unknown word, but within the context of predicting it was expected that they would be able to guess its meaning from context.
Weather forecast (<i>bleiben</i>)	In addition to looking only at today's weather students were asked to look at the weekly forecast. <i>Bleiben</i> (to remain) is an unknown word.
Bad Weather	
Testing predictions: bad	Students access a German weather site to look for the city where they had predicted the weather would be good according to their own characteristics.
Interpret weather information	Same as for good weather.
Temperature	Same as for good weather.
<i>Wirklich</i>	Same as for good weather.
Weather forecast (<i>bleiben</i>)	Same as for good weather.
Blackboard posting ^a	
Understand instructions	Students realized that they were posting weather forecasts for the other students to read.
Post message	Students accessed Blackboard, located the Bulletin Board, wrote a subject and entered weather information for their cities.
Complete summary table	Students read weather information supplied by other students in the class and entered relevant information into the weather summary table.

Note. ^a Task elements relating to posting to Blackboard were excluded from data analysis.

WebQuest 2, "*Einkaufen*" (shopping), reproduced in Appendix E, is based on materials covered in chapter 2 of the textbook, which introduces articles of clothing, the Euro, expressions of likes and dislikes, and the use of the accusative case. Within the framework of the game show *The Price is Right*, students were presented with a showcase featuring the pictures of four items: women's boots, a man's sweater, an

armoire, and a designer watch. As a team, they were asked to predict the prices for these items before accessing a German online mail-order catalog to test their predictions against the actual retail price. Students were then asked to state their opinions about the various articles in complete sentences, which provided an obligatory context of the use of the accusative case. Table 9 provides an overview of the various elements of the task. After sharing their prices and opinions with the class via an electronic bulletin board, they decided what to buy for family members with an imaginary 200 Euros.

Table 9. WebQuest 2 (Shopping) Overview of Task Components

Component Label	Description of Successful Completion
Understand “Price is Right”	The German title for the popular American game show “The Price is Right” is <i>Der Preis ist Heiß</i> , which literally means “the price is hot”. Understanding that the activity is adapted from the game show is essential in accomplishing the task.
Guessing prices	Following the theme of “The Price is Right”, students were to guess prices for the specific items provided on the worksheet before searching the Web site.
<i>Vermutlich, wirklich</i>	The worksheet provided a space for the guessed price (<i>vermutlich</i>) and the actually price (<i>wirklich</i>). <i>Vermutlich</i> is an unknown word, but <i>wirklich</i> was used during the first WebQuest.
Finding items	
Boots	Students look for the specific boots shown on the worksheet.
Sweater	Students look for the specific sweater shown on the worksheet.
Armoire	Students look for the specific armoire shown on the worksheet.
Watch	Students look for the specific watch shown on the worksheet.
Understand <i>teuer</i>	Students are asked whether or not they think the actual price for these items was expensive.
Converting prices	The German site listed the prices in Euros, so in order to understand the pricing, some students converted the prices into Dollars.

Table continued on the next page

Table 9 (Continued)

Writing opinions	
Understand <i>Wie finden Sie</i>	Students are asked to write their opinions about items they searched for in the previous portion of the WebQuest. The expression “ <i>Wie finden Sie...?</i> ” (literally “How find you...”) means “What do you think of”, and had previously been studied in class.
Writing complete sentences	This construction provides an obligatory context for the use of the accusative (object) case.
Blackboard Posting ^a	
Post message	Students accessed Blackboard, located the Bulletin Board, wrote a subject and entered their opinions.
Summary table	Students understood that they filled out the summary table according to the opinions posted by the other students.
Currency conversion	Students used the online currency converter to determine the US Dollar equivalent of 200 Euros.
Understand table (<i>wer, wen</i>)	Students identified that the table referred to: the person who was buying the present, for whom he or she is buying a present, and what item he or she was going to buy.
Find presents	Students found the items they had planned on purchasing for their family.

Note. ^a Task elements relating to posting to Blackboard were excluded from data analysis

WebQuest 3, “*Wir planen eine Reise*,” (Planning a Trip), which is reproduced in Appendix F, focused on evaluating possible travel destinations based on preferences relating to leisure activities. The primary grammatical concept covered in chapter 3 of the textbook is the use of modal verbs allowing students to express what they can, like, want, must, should, and are allowed to do. Subordinating conjunctions and the dependent clause word order are also introduced in that chapter of the textbook. Table 10 provides an overview of the various elements of the task.

First, students were asked to compile a list of activities they would like to do on a vacation. Using *möchten* (would like to) provides an obligatory context for a sentence

final infinitive, which means that the infinitive of the main verb is the last word of the sentence. Students were then presented with three cities from which to choose. After quickly scanning the website for each of the cities, students were asked to decide on one of the destinations and to find specific information such as activities, lodging, and weather, which they then shared with the class via an electronic bulletin board. Students read each other's postings and compiled the information in a summary table.

Table 10. WebQuest 3 (Planning a Trip) Overview of Task Components

Component Label	Description of Successful Completion
Travel activities	Students were asked to talk to each other about what they like to do on a vacation.
Modal word order	In expressing what they would like to do on a vacation, students were expected to use <i>möchten</i> , which requires a special word order: the main verb's infinitive needs to be placed at the end of the sentence. This structure had been previously studied in class.
Choosing a city	
Understand that choices are cities	Students were presented with links to the Websites of three cities. Since lesser known cities were used in an attempt not to predispose students to a particular city it was not clear to all students that the link were cities rather than search engines.
Explore quickly based on their desired travel activities	In order to select one of the cities students needed to scan through the content of each city's site to get an overall idea of the three locations.
Answering questions	
a) <i>Wohin</i>	Students state to which city they would students like to travel.
b) <i>Wo</i>	Students state where the city is located.
c) Activities	Students write a list of activities they would like to do in that city.
d) <i>Wetter</i>	Students describe the weather in that city.
e) Hotel	Students choose a hotel.

Table continued on next page

Table 10 (Continued)

f) Hotel features: swim, eat, park, smoke	Students find out if it is possible to swim, eat and park at the hotel, and whether or not smoking is permitted.
g) Price	Students state the price per room.
h) <i>Teuer</i>	Students evaluate whether that price is expensive.
i) Reason (dependent clause word order)	Students restate in one sentence why the city they have chosen is a good destination. The subordinating conjunction <i>weil</i> (because) provides an obligatory context for the dependent clause word order, which had been previously studied in class.

Blackboard Posting ^a

Post message	Students accessed Blackboard, located the Bulletin Board, wrote a subject and entered tourism information for their destination.
Summary table	Students read each others' postings and completed a summary information about the different destinations.

Note. ^a Task elements relating to posting to Blackboard were excluded from data analysis.

Task Procedure

Upon arriving at the computer lab for each of the three WebQuest tasks, students proceeded to their assigned workstations. The computer lab houses 35 computers (20 Macintosh computers and 15 IBM compatible computers). However, only PCs were used for the data collection because the software used to record on-screen action and verbal interaction only functions on PCs.

Figure 6 represents the layout of the computer lab and the location for the various dyads. Because of the configuration of the lab, some groups were seated in close proximity to other groups. After the first task, some computer problems, as well as crowding, which interfered with the sound quality, necessitated some changes in group locations. Two dyads worked in the same location for all three collaborative reading tasks. Both dyads were located towards the back of the room. D/C's computer, PC16, was

Figure 6. Group Distribution and Layout of the Computer Lab

FRONT OF THE ROOM WITH PROJECTION SYSTEM												
Mac	Mac	PC 4		PC 3			Mac	Mac	PC 2	PC 1		
	S	S		F	T 2, T 3	B				F	T 1	B
						T 2, T 3						T 1
Mac	Mac	PC 8		PC 7			Mac	Mac	PC 6		PC 5	
	Jo	L		R	T 2, T 3	Che			R	Che	M	Je
						T 2, T 3			T 1	T 1	T 1	T 1
Mac	Mac	PC 12		PC 11			Mac	Mac	PC 10	PC 9		
	S	S		R		T						
Mac	Mac	PC 16		PC 15			Mac	Mac	PC 14	PC 13		
	D	Cha		S		S						
	LAPTOP							PC	PC			
	M	J										
	T 2, T 3	T 2, T 3										
BACK OF THE ROOM												

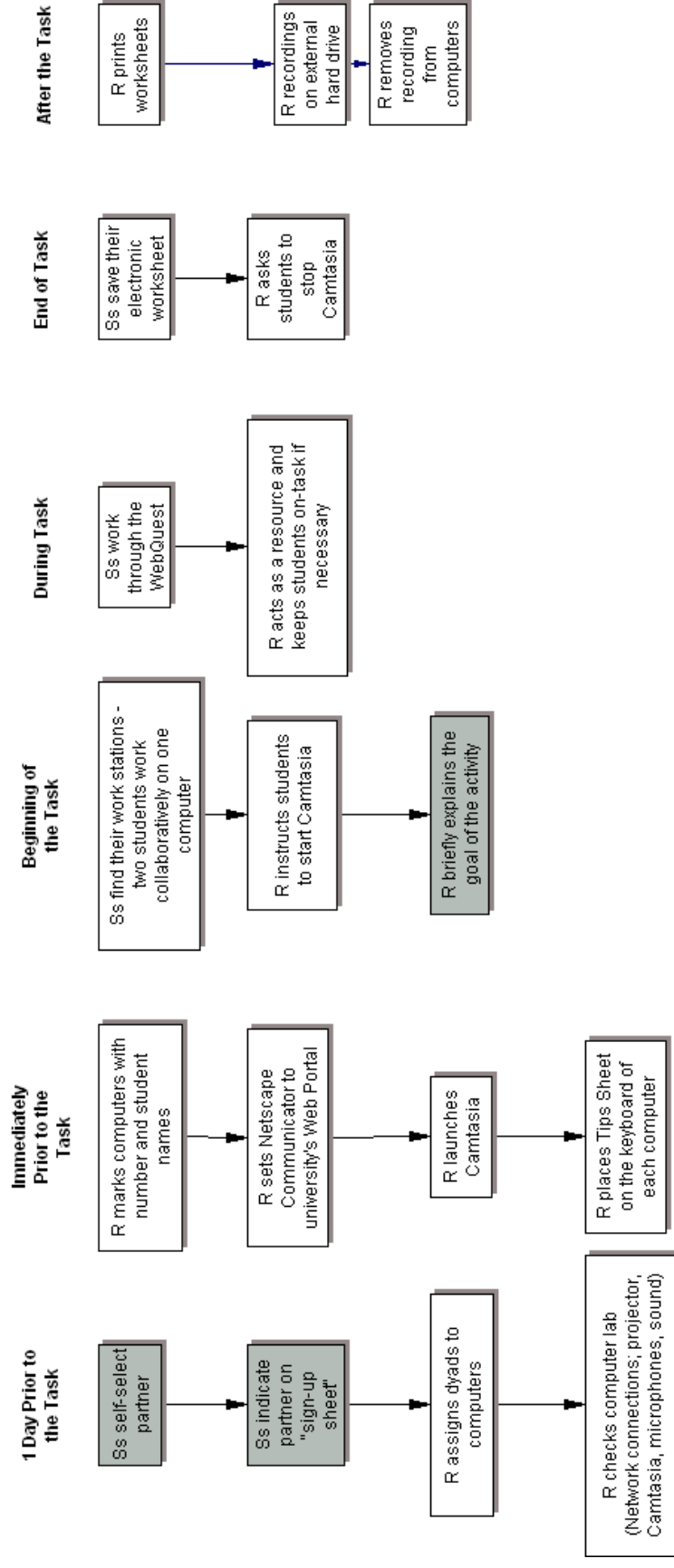
Note. S indicates the location of students whose data were not included in the data analysis.

T1=WebQuest 1; T2= WebQuest 2; T3=WebQuest 3

located in Row 4, the second to the last row of tables in the room. In fact, during the first task, this was the last row in which students were seated. R/T worked on PC11 located in the third row from the front of the room. Both were located next to student dyads that were ultimately dropped from data analysis. All of the changes in location were undertaken after the first task. F/B moved from PC1 to PC3 which were both located in the front row. R/C also switched computers within the same row, moving from PC6 to PC7, while M/J moved from a desktop computer (PC5) located in the second row to a laptop computer, which was added to the last row.

The task process is illustrated in Figure 7. To facilitate students' access to the site where the worksheet and the discussion board were located, the computer screens displayed the log-in screen for the university Web Portal. The researcher had also launched the full motion screen recording application before the students arrived. Allowing a few minutes for late arrivals, the instructor asked students to start the full motion screen recording application and subsequently explained the WebQuest. A small flashing button at the bottom right-hand corner of the screen indicated when the screen capture application was recording. For the initial WebQuest, the investigator instructed students in how to log onto the university's Blackboard campus portal, navigate to their German class site, download the WebQuest for that day to the computer's desktop, and open it in Word. For subsequent WebQuests, students started the process on their own without teacher-fronted instructions. During the collaborative online reading tasks, the investigator circulated among the groups to make herself available as a resource and to keep students on-task, if necessary. At the end of the class session, students were asked to stop the recording software.

Figure 7. Overview of the Task Process



Note. Elements with gray background were only conducted for the first WebQuest
 R=researcher; Ss=students

During the task, a full motion screen recording application created a video file of the on-screen action and verbal interaction. When the recording was stopped, the video file was automatically saved onto the computer's hard drive with a file name indicating the computer number and task. Immediately after each of the tasks, the files were transferred from the local hard drive to a portable external hard drive. Since the computers in the lab were used by several different instructors and students, the files were removed from the hard drives of the computers to ensure confidentiality of the data.

Stimulated Recall Interviews

The purpose of conducting stimulated recall interviews was to achieve a more complete understanding of the dyads' problem-solving process. Talking to the students about their thought processes during the WebQuest allowed the investigator to verify inferences made based on data gathered during collaborative online reading tasks. This form of member check contributes to the trustworthiness of the findings. The stimulated recall sessions were audio-recorded and transcribed for analysis. An excerpt is provided in Appendix G.

Stimulated recall interviews were conducted with three student dyads after Task 2. The researcher attempted to schedule interviews with all six dyads after the third task; however, two students in two different dyads were unavailable to be interviewed. Therefore, those two stimulated recall interviews were conducted with only one participant each. After watching and listening to the data collected during the WebQuests, the investigator identified excerpts that were compelling either because of the strategic behaviors the students exhibited or because she wanted to ask questions

about extended periods of silence. While a list of questions was prepared ahead of time (see Appendix H), no fixed protocol was followed during these interviews.

The investigator scheduled meetings with particular dyads according to the students' schedules. In order to ascertain the students' perspective of certain episodes, first a portion of the screen capture video recording was played back. Students were then asked to reflect on their thought processes at the time of the recording. The investigator refrained from comments during this task as much as possible and restricted her interaction to instructions and backchanneling cues. In a second step, students were asked to respond to observations made by the investigator. Even though specific episodes cannot be relived, they can be illuminated by reflection and by placing them in their larger context. The nature of the social interaction during these sessions also served to verify the WebQuest data.

Data Analysis

Due to the qualitative nature of this investigation, data analysis was ongoing and iterative. Data collection and analysis were intricately connected, but data analysis continued well after the end of data collection. The precise coding schemes, data displays and interpretational mechanisms were not set a priori but necessarily emerged during the process of data collection and analysis.

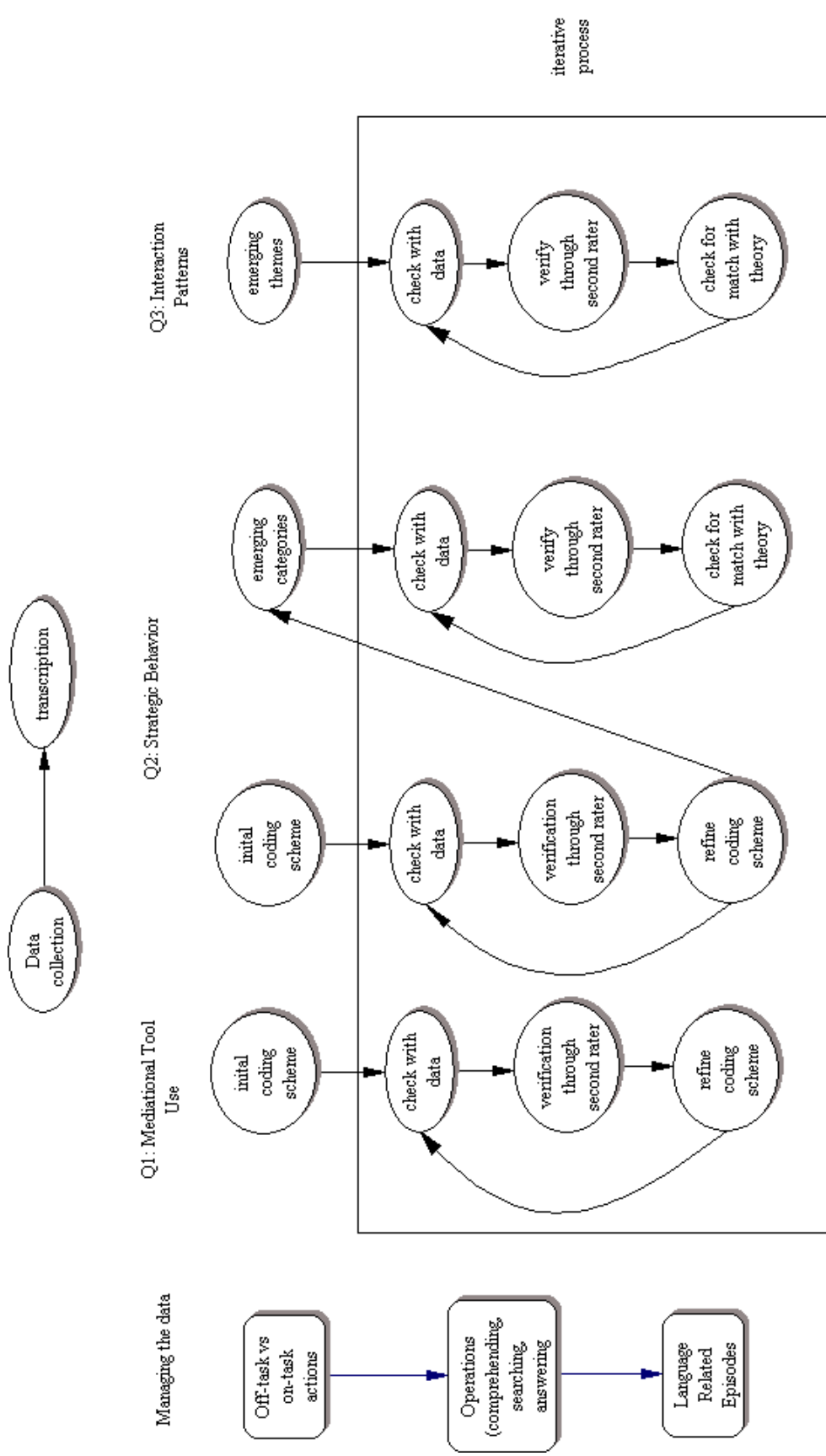
There are, however, some established procedures that guided the data analysis. In their description of qualitative analysis, Miles and Huberman (1994) propose an Interactive Model of Data Analysis consisting of data collection, data reduction, data display, and conclusions: drawing/verification (pp. 10-12). It is important to point out

that these actions are not carried out in a chronological sequence, but rather in cycles. Each element is thus connected to each of the other components. The initially collected data undergo a process of reduction, during which the investigator selects, focuses, simplifies, abstracts, and transforms the data (Miles & Huberman, 1994, p. 10). Data displays aid in data reduction and are products thereof. Creating overview tables, categorizing codes, and graphics representing preliminary findings served as a first attempt to interpret the data and to find ways to communicate these findings to others. Conclusions were drawn and verified based on the process of data reduction and display and fed back into data collection. Following this model, even establishing the coding scheme is part data reduction and drawing conclusions at the same time (see Figure 8). The coding scheme was created and refined during each cycle of data collection, reduction, display and conclusions.

Transcription of Verbal Interaction and On-Screen Actions

The primary and most substantive data were gathered via screen recording during the three collaborative online reading tasks. However, before these data could be analyzed they had to be transcribed. Steps taken in data management and analysis of WebQuest data are illustrated in Figure 8. Even though similar conventions exist and were adapted, no prior transcription conventions exist for this type of data. Ganderton (1999) and Schiffrin (1994) describe a storyboard transcription method, which was found to be not feasible for these data. Within conversation analysis, conventions exist for the transcription of verbal interaction, and to some extent for gesture, eye gaze, and similar components of face-to-face interactions. Rather than depicting people in conversation

Figure 8. An Overview of Data Management and the Iterative Data Analysis Process



with each other, the innovative data collected via screen recording revealed students' dialogic engagement as well as manipulation of the computer as a participant in their activity. In usability studies where the focus is on human-computer interaction, an observation technique is generally used during which an observer watches the "tester" while performing actions on the computer and focuses on specific features that may present a problem to the user (Nielsen, 1997). These sessions may or may not involve direct questions asked by the observer, but traditionally no transcription record of every click and cursor movement is created. With the application sharing and screen recording software becoming available, usability studies are moving to remote models, which will lead to video data that will then need to be analyzed. However, at this time, the researcher is not aware of any conventions that have been established for transcribing on-screen action in conjunction with verbal interaction. Establishing transcription conventions was, thus, the first step in the analysis.

Transcription Conventions

Transcripts were labeled by WebQuest number (T1, T2, T3) and dyad (B/F, R/C, D/C, J/L, M/F, R/T). Each line of transcript was numbered starting with line 1 in each transcript. Transcribing the verbal data followed standard conventions, provided in Appendix I. Verbal interactions were transcribed verbatim, but not phonetically. In order to make the transcripts more accessible, a visual coding scheme was used during the transcription process. Utterances in English were reproduced in black, while those in German were coded in red. Utterances by the teacher were indicated by using italic font, and off-task sections are represented by gray font. In order to distinguish between verbal

interaction and on-screen actions, blue font was utilized to transcribe the actions observed on the screen. A two-line system was devised, which reproduces verbal interaction on the top line and on-screen actions underneath in blue. On-screen actions were listed below the verbal data and the temporal relationship between student utterances and actions was maintained. Transcription conventions are provided in Appendix I.

Excerpt 1 and the series of screen captures (Figures 9 – 11) exemplify the data obtained via the full motion screen recording application and illustrate the transcription method. One of the challenges of video data is to represent it in a way that makes it accessible to an audience of readers. The 13 lines of verbal interaction are accompanied by three static screen captures taken at strategic points during the interaction. The superscript numbers in the transcript indicate that a screen capture is provided below. It is taken from B/F working on WebQuest 1 (T1). F and B had looked at the weather for Melbourne and were entering the information into the worksheet at the beginning of this excerpt.

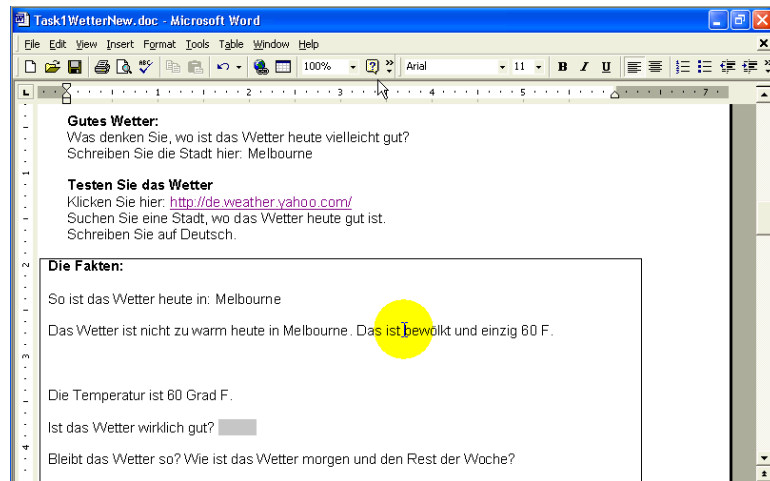
The full motion screen recording application captures every aspect of the screen. The location of the cursor is indicated by a yellow dot, and clicking is made salient by the appearance of a red ring around that circle.

Excerpt 1. T1_B/F

612:	Mwt worksheet		
613: F:	So it's über... ü it's alt zero deux cinq deux (French) alright. Überwiegend gölb		
	or gölbt,		
614: C:	before bewölkt	tp ü	tp berwiegeld
615:	do you remember?		
616: B:	gend		
617:	...		
618:	mwt IE; select yahoo		
619: F:	gend		
620:	Cr over überwiegend; mwt worksheet		

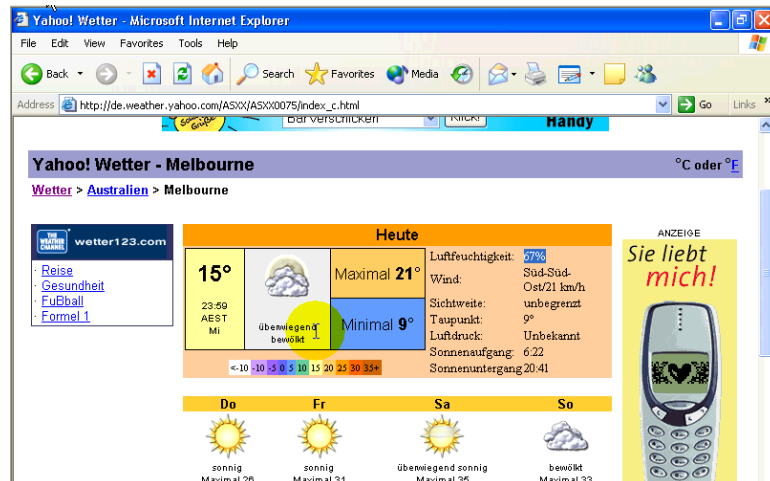
621: B: über | wiegend
 622: DI ld; tp nd
 623: F: überwiegend bewölkt und, und...
 624: DI einzig 60 F.

Figure 9. T1_B/F line 614 (27:18)



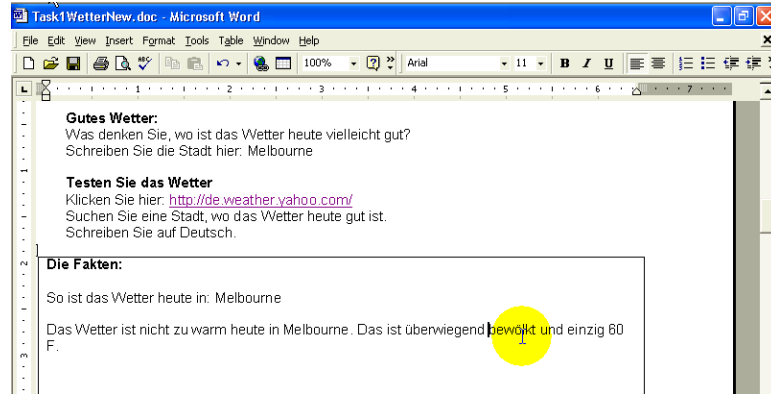
Note. Line 614

Figure 10. T1_B/F line 620 (27:45)



Note. Line 620

Figure 11. T1_B/F line 622 (27:53)



Note. Line 622

In line 612 students click on the minimized window tab (Mwt), which launches the worksheet. F clicks (cl) before the word *bewölkt* when she starts talking. The umlauted letter ü appears as she starts uttering the word *überwiegend* and, after a pause in typing during which she is engaging in oral drafting, she types (tp) the rest of the word. No on-screen actions were observed while F asks B, “Do you remember?” and while B utters the last syllable of the misspelled word. In lines 617 and 618, the student controlling the mouse (in this dyad, that tended to be F) clicked on the minimized window tab (Mwt) for Internet Explorer (IE) and select Yahoo! without any verbal interaction (...). Pointing with the cursor to the word they are trying to reproduce on the worksheet, F says the last syllable out loud before returning to the worksheet via the minimized window tab at the bottom of the screen. While F is deleting the incorrect letters “ld” and replaces them with the correct spelling “nd”, B pronounces the word, and after the first syllable, F overlaps by rereading the answer. While saying *und, und...* (and, and...), she also deletes the a phrase they had already written.

Trustworthiness

Qualitative research is evaluated using the concepts of credibility, transferability, dependability, and confirmability rather than using terminology situated in a quantitative paradigm (internal validity, external validity, reliability, objectivity). Since the reader may not be as familiar with these terms, each will be described in relation to this research. An overview of establishing trustworthiness in qualitative research is presented in Table 11.

Credibility

Credibility is the term most closely aligned with internal validity as it is used in quantitative research. The investigator needs to ensure that the findings are convincing. Lincoln and Guba (1985) suggest several techniques (see Table 11). Prolonged engagement and persistent observation are satisfied by the fact that the investigator was the instructor of the course and that a series of three tasks was utilized to collect data. Several data sources, questionnaires, interviews, on-screen action, verbal protocols and worksheets were employed in this analysis, allowing for triangulation of data sources. One of the co-major professors acted as the second rater and participated in the peer debriefing process. Within the iterative data analysis process, “negative cases” provided impetus to revise previous conclusions where necessary. Referential adequacy, the authenticity of the data used in data analysis, was established by using audio and screen recording to capture the data. The stimulated recall interviews provided opportunities for member checks.

Table 11. Summary of Techniques for Establishing Trustworthiness

Criterion Area	Technique
Credibility	Field activities Prolonged engagement Persistent observation Triangulation (sources, methods, and investigators) Peer debriefing Negative case analysis Referential adequacy Member checks (in process and terminal)
Transferability	Thick description
Dependability	Dependability audit including audit trail
Confirmability	Confirmability audit including audit trail
All of the above	Reflective journal

Note. Adapted from Lincoln & Guba, 1985, p. 328

Transferability

While quantitative investigations are concerned with external validity or the ability to generalize to a larger population, qualitative research values transferability. Within a SCT framework, the concept of generalizability is redefined because no two contexts are ever identical. Consequently, detailed information about the specifics of an investigation enable the reader to decide whether or not the findings are applicable to his or her specific context. It is thus paramount to provide descriptions that are sufficiently “thick” to allow the reader to make that judgment. The description of classroom activities, information gathered via the background questionnaire and the stimulated recall interviews provided the insight into the class culture and into personal characteristics of the students. Rather than norming this information through using a

priori codes and conducting inferential statistics, a narrative approach to relating this information has been adopted in this investigation.

Dependability and Confirmability

The quantitative terms “reliability” and “neutrality, ” are roughly similar to the qualitative terms “dependability” and “confirmability, ” as they are used to gauge the quality of the research process. A useful technique is that of auditing, a term borrowed from accounting. The auditor makes certain first that the process is not only truthful and without errors, but that the research methods are fair and ethical. Second, the auditor verifies that the investigator can justify the data and conclusions. The investigator thus must keep a detailed record of all procedures used during data collection and analysis. This is known as the audit trail. The dissertation advisors acted as auditors for this investigation.

Finally, the investigator needs to be aware of the influence of personal biases. Thus, Lincoln and Guba (1985) recommend the keeping of a reflective journal by the investigator. The journal expressed the investigator’s reflections regarding (a) general logistics, (b) personal observations, and (c) methodological decisions. This information allowed the auditors and the investigator to critically engage with the interpretive process of research.

In order to ensure reliability of the coding and inferences, the researcher tested intrarater reliability by re-coding 5% of the selected episodes. Interrater reliability was established by training the second rater in the coding scheme and verifying a sample of coded data at different times throughout the data analysis.

Summary

An overview and a rationale for the case study methodology employed in this naturalistic classroom based study was provided in this chapter. The primary measuring instrument is the researcher, who was also the instructor of the beginning German course that provided the participants for this investigation. A variety of data collection procedures (questionnaire, interviews, and observation) were utilized to allow triangulation. The data collection, management, and analysis will be presented in chapter IV.

Chapter IV: Data Analysis and Results

This chapter provides information regarding all elements of the data analysis and discusses the data in terms of the three research questions posited in this investigation. In order to set the stage for the detailed description of data management and analysis, this chapter starts by presenting an overview of the data collected throughout the study. In addition, before discussing the results in relation to each of the research questions, the methods of data management, reduction, and display will be explained. The WebQuest data had to be modified from its original video and audio format into text and images in order to make it accessible for data display and analysis. After explaining the transcription procedure and conventions developed by the investigator, the coding process will be described. Finally, in this chapter the various data collected will be used to answer the three research questions posed in this study.

1. What mediational tools do beginning German as a Foreign Language students access to negotiate technology as they work to accomplish collaborative online reading tasks?
2. How do beginning German as a Foreign Language students use these mediation tools to regulate their strategic activity during collaborative online reading tasks?
3. How does strategic activity through dialogic engagement develop over time?

Though these questions are interrelated, in this chapter an attempt has been made to answer each question individually. The data will now be presented.

The Data

As indicated in chapter III, data were collected via a Background Questionnaire, a Personal History Interview, three WebQuests, and Stimulated Recall Interviews with selected students. The Personal History Interviews were audio taped and compiled in an interview protocol. The Stimulated Recall Interviews were audio taped and transcribed verbatim. The transcription of the data received from the full motion screen recording application software included a video capture of the computer screen during the task as well as an audio recording of the students' verbal interaction.

Table 12 provides an overview of the data. Approximately 400 minutes of Personal History Interviews and 400 minutes of Stimulated Recall Interviews were collected. The overall duration of data collected during the WebQuests was 807 minutes and 21 seconds (13 hours, 37 minutes, 21 seconds), which resulted in 20,892 lines of transcribed text, the totality of which provided the primary data source for this study.

As described in chapter III, from the 20 students enrolled in this course, eight were dropped from the data analysis. The main criterion for excluding students from the study was failure to complete one or more WebQuests. Although not all students included in the study produced a complete data set, they all participated in all three WebQuests with the same partner.

Table 12. Overview of the Data

P	Questionnaire	Interview	Task 1		Task 2		Task 3		Stimulated Recall 1	Stimulated Recall 2
			Min	Lines	Min	Lines	Min	Lines		
B	Y	Y	43:10	1346	48:35	974	44:43	1333		Y
F	Y	Y								
Che	Y	Y	40:03	1228	49:47	860	46:35	1359		Y
R	Y	Y								Y
D	Y	Y	40:53	1188	47:43	1056	40:23	1170	Y	Y
Cha	Y	Y							Y	Y
L	Y	-	36:26	761	46:00 ^a	987	47:33	1113		Y
Jo	Y	Y								Y
M	Y	Y	40:50	1146	32:55 +	863	48:12	1292	Y	Y
Je	Y	Y			12:22 ^b				Y	Y
R	Y	-	42:10	1522	49:40	1441	49:21	1253	Y	
T	Y	Y							Y	Y
Total			243:32	6181	276:47	7520	287:02	7191		

Note. P=participants

^a J arrived 9 min late and L worked with another group for 9 minutes, but left the recorder running. The video recording was also frozen from minute 35 to the end at minute 46 (while searching for hotel)

^b The computer froze after 32 minutes and had to be restarted. The recording was resumed as soon as the computer had been restarted.

Background Questionnaire

All students in the course completed the pen and paper Background Questionnaire (see Appendix B) during the first week of the course. Although the course was a first semester German class, several students entered this course as “false beginners” as they had either studied German in high school or had learned German as a heritage language. Within Vygotskian investigations of collaborative activity, the concepts of expert and novice play an important part in development and learning. Consequently, knowing how much prior experience in German students bring to class is an important piece in interpreting their strategic behaviors and interaction with each other.

Students’ reasons for taking German at the college level can inform the investigator about the goals and motives underlying the students’ actions. A student who is planning a trip to Germany might presumably work through an online activity on that topic with different goals than would a student who does not have such a real world connection to the task. From a SCT perspective, students with different goals are in essence engaged in different activities, even though they are completing the same task. This difference may have an effect on their strategic behaviors during problem-solving. Participants’ responses to the Background Questionnaire are summarized in Tables 13 and 14.

Students in this study worked in self-selected dyads during the collaborative online reading task. In the naturalistic classroom environment, students were often allowed to organize themselves in this way. As a result, students got to know each other rather quickly during the first weeks of the semester and were familiar with this process

of selecting partner. While they were encouraged to get acquainted with all the other students in the class, relatively stable dyads and small groups developed early.

The self-selection of partners resulted in three mixed ability-dyads (A/B), two dyads with two beginners (B/B), and one dyad consisting of two more advanced learners (A/A). Four dyads were mixed gender, one dyad consisted of two female students, and one dyad consisted of two male students. Of the 12 participants eight indicated that they were taking the course to fulfill their language requirement, and only two were interested in a German major or minor.

Table 13. Summary of Participants' Background Information

P	Gender	Age	Home Language	Previous German	
B	M	22	English	Little – German diction for singers	(B+)
F	F	24	French	2 years – ages 13 to 14	(A)
R	F	19	English	2 years in HS in Ramstein, Germany	(A)
Che	F	20	English	0	(B)
D	F	32	English	0	(B)
Cha	M	26	English	1 year at Community College	(B+)
L	F	20	English	4 years in Junior High and HS	(A)
Jo	M	19	English	0	(B)
M	M	20	English	0	(B)
Je	F	19	English	0	(B)
R	M	19	English	3 years in HS lived in Germany for 7 years	(A)
T	M	21	English	1 year in HS – 4 years ago	(A-)

Note. P=participant. Students are grouped by dyad. The last column represents categories of prior German experience deduced from students' answers. "A" designates an advanced level of German and "B" a beginning level. Pluses and minuses were used to denote gradations within this system. For example, while both R and T had previously studied German, R had significantly more exposure than T.

Table 14. Summary of Participants' Reasons for Studying German

P	Language	Culture	Family	Language requirement	German major/minor	Future career	Travel
B	A	A	SD	SA	D	D	A
F	SA	A	SA	SD	SD	A	SA
R	SA	SA	SA	D	D	SA	SA
Che	A	A	SA	SA	D	A	A
D	A	A	SD	SD	D	D	SA
Cha	A	A	D	SA	SD	A	D
L	SA	SA	SD	SA	D	SA	A
Jo	SA	SA	D	A	D	A	SA
M	SA	SA	A	A	SD	A	A
Je	SA	A	D	D	A	SA	SA
R	SA	A	SA	A	SA	SA	A
T	SA	A	A	A		SA	SA

Note .P=participant. SA=Strongly Agree; A=Agree; D=Disagree; SD=Strongly Disagree
Please refer to Appendix B for the specific questions

Personal History Interviews

Prior German experience was not the only aspect in which dyads differed. Table 15 provides a keyword overview of student answers to the interview questions. While this information is presented here as an introduction to the students participating in this research, it will be discussed in more detail in the data analysis section of this document.

When asked about previous experience, students reported a wide range of experiences. All students had participated in group or pair work prior to this course, and most related both positive as well as negative experiences.

Table 15. Personal History Overview

P	Reason for taking German	Reading	Internet	Group Work
B	Required for music majors To get a basic idea of meanings and grammar and to pronounce it well in song	Reads a lot (fantastic literature, science fiction, magazines) Listens to NPR instead of reading the newspaper	Constantly keeps up with e-mail Does research, downloads music, checks movie times	"I play well with others." Like group work as long as the other accept his sexual orientation
F	To be able to speak it with her grandparents who live in Strassburg	Does not like to read Is a slow reader Is always behind on the readings at school Reads magazines	Does not check e-mail Mainly for school Uses IM Occasionally French sites, movie times	Enjoys group work Ended up being the leader of her group in another class Likes to be in control
Che	Boyfriend's recommendation	Reads a lot, but mainly for class Is a slow reader	Checks e-mail 3 times a day Does School work Uses Instant Messenger Checks weather and travel information	Likes working in groups Quieter in German because she does not want to speak
R	Language requirement Would like to be stationed in Germany with the military	Reads all the time (Stephen King, non-fiction, religious texts, history, newspaper) Remembers well what she reads	Checks e-mail every couple of days Does research for school Checks movie times	Does it, but wouldn't choose it. "I am a complete control freak." Worries about partner slacking off

Note. P=participant. Students are listed by dyads.

Table continued on next page

Table 15 continued

P	Reason for taking German	Reading	Internet	Group Work
D	Husband's in the military and he's going to be stationed in Germany	Enjoys reading (romance novels and mysteries)	Checks e-mail once a week Does research for school and children's school work Checks movie times, travel planning, looking for apartments	Apprehensive in German class Feels the other students know more Feels more comfortable when she can contribute to the group
Cha	Requirement for philosophy graduate degree	Reads extremely slowly Does not consider himself a good reader (thinks that he might have an impairment) Cannot concentrate on the readings	Checks e-mail once a day	Likes the idea of group work, but sometimes other students are not "into it" and are not doing any work Likes to be in charge
L ^a	---	---	---	---
Jo	Stayed in Berlin past summer with church group Wants to return to Berlin	Does not really enjoy reading. Would watch the movie over reading the book Reads for information, not for pleasure	Checks e-mail once a day Checks movie times, news, and entertainment, E-bay	Enjoys group work Would choose pair work rather than a lecture Occasionally feels shy in group work in German class because he feels that he is not as strong in German as other students

Note. P=participant. Students are listed by dyads.

^a L failed to schedule an interview time.

Table continued on next page

Table 15 continued

P	Reason for taking German	Reading	Internet	Group Work
M	Interested in studying in Germany because philosophy is strong in Germany	Reads a lot (whenever he has time) Considers himself to be a good reader	“Internet geek” About 84 hours online a week Uses Instant Messenger Checks, news, movie times, travel planning	Group work is “OK”, but prefers to work on his own Cannot always have control over the direction of the group
Je	Did not want to continue with French Saw a German movie and decided to learn German	Enjoys reading (novels, nonfiction, expository text) Takes notes while reading textbook, rereads for meaning	Checks e-mail every day Uses Instant Messenger Does research for personal interest Checks movie times, travel planning, E-Bay	Does not really like group work Would prefer to be quiet in language class because she is shy Likes to have control over the tasks Works well with people who contribute equally
R^b	---	---	---	---
T	Ties into International Business major Wants to go the German	Is a good reader, but gets easily distracted	Checks e-mail at least twice a day Shopping, research, online courses	Group work lets people get to know each other and is beneficial. Is a perfectionist and often takes on the role of “group manager”

Note. P=participant. Students are listed by dyads.

^a L failed to schedule an interview time.

^b Because of technical difficulties no information is available from R’s interview

Managing the Data

Before the data analysis commenced, all 18 WebQuests were transcribed in the fashion outlined in chapter III. The reader will recall that a two-line transcription method was used in order to present both the verbal interaction between the students and the teacher as well as each dyad's on-screen actions in their temporal relationship to each other. Processing the video data in this way made it possible to present and manipulate them on paper and in a word processing program. In addition to this transcription, three more steps were taken to prepare the data. First, off-task actions were eliminated from further data analysis, on-task actions were classified according to operations, and language related episodes were identified. Each of these steps is rooted in SCT and Activity Theory and will be explained in more detail in the following sections.

Step 1: Identifying On-Task Actions

The first step in analyzing the WebQuest data was to identify those periods during which students were engaged in solving the WebQuest and to eliminate off-task data from further data analysis. All 18 transcripts were coded according to on-task and off-task actions. Within SCT, the notion of action is tied to the goals students are pursuing. On-task actions are those during which students are directly working towards the goal of completing the Web-Quest. Off-task actions, then, are all other behaviors in which students engage. Within off-task actions several themes emerged from the data. They fell into seven categories: preparation, personal, research, course management, computer management, accessing non-German Websites, and other (see Table 16). The number and type of off-task actions per student dyad provides insight into, among other things, the

overall interactional patterns between students (personal), how using of the computer impacted the process (computer management), and how much of a role the recording (research) played during task completion.

Table 16. Types of Off-Task Actions

Label	Examples
Preparation	Explanations of the task by the instructor Accessing Blackboard Downloading the worksheet Opening the worksheet from the desktop
Personal	Personal anecdotes News stories Personal background
Research	Instructions for starting and stopping the recorder Students starting and stopping the recorder Asking students to save the document Student comments about the fact that they are being recorded
Course Management	Homework assignments Upcoming tests, oral examination Questions relating to any aspect of the course other than the WebQuest Time limits
Computer management	Link does not open Umlaut does not work Frozen cursor
Sites other than German	English sites French sites
Other	Talking to other groups Completing task elements excluded from data analysis

Overall, 202 off-task actions were identified (see Table 17). Off-task actions varied in length from a few seconds to several minutes. However, any identifiable continuous period of off-task action was counted as one instance without counting lines

or measuring time. By far the largest number of off-task actions, 63 instances (31%), were identified as relating to computer management (such as downloading the worksheet, manipulating menus, accessing inactive links). Every dyad engaged in various forms of computer management (generally, problems), which diverted their attention away from the WebQuest itself. Personal conversations accounted for 51 off-task actions, representing 25% of the off-task interaction. The topic of research itself (e.g., stopping the recording software or talking about being recorded), was coded 24 times and accounted for 12% of off-task actions. Preparation and course management combined for 10%, and during 7% of off-task actions students were accessing non-German Web sites.

The number of off-task actions differed greatly among dyads. With a total of 20, D/C exhibited the lowest number of off-task actions, 10 of which were related to computer management. Even though an equal number of off-task actions (45) were identified in both B/F and M/J, the types of off-task actions differed significantly. B/F had 17 personal conversations and 10 computer problems, whereas M/J had 17 computer problems and eight personal conversations. With seven, R/T had the highest number of course management related off-task actions.

In order to gain insight into mediational tool use, strategic behaviors and interactional patterns during students' attempts to complete the WebQuests, only On-Task actions were further analyzed.

Table 17. Off-Task Actions by Dyad

	B/F	R/C	D/C	L/J	M/J	R/T	Total
Computer	10	14	10	2	17	10	63 (31%)
Personal	17	8	1	9	8	8	51 (25%)
Research	9	2	4	2	2	5	24 (12%)
Preparation	1	2	3	1	3	1	11 (5%)
Course Management	1	1	2	0	0	7	11 (5%)
English site	1	2	0	0	7	4	14 (7%)
Other	6	4	0	7	8	3	28 (14%)
Total	45	33	20	21	45	38	202

Note. Percentages were rounded to the closest percentage.

Step 2: Identifying Operations

After reducing the data to on-task actions, the next step in the data analysis was to identify operations. Activity Theory organizes human goal-directed endeavors into three levels: Activity, Action, and Operation. Students in this study were engaged in the activity of formal education with all its corollaries. Completing the WebQuest was one of the goals that were part of this activity. Even though motives and goals are not static, while students were on-task, they were engaged in completing a specific goal. Operations are the next smaller unit in Activity Theory. They are the specific behaviors in which students engage to reach a goal. Rather than using the different questions posed to students during the three WebQuests, on-task actions were classified into three separate yet interrelated operations: comprehending (reading and discussing the task in

order to understand it), searching for information on the Internet, and answering (writing and discussing answers on the worksheet).

The transcripts were coded according to the specific operations by using color. On the printed transcripts, a vertical yellow line in front of the line number indicates segments during which students were working toward comprehending the worksheet and thereby the task. Green was utilized to indicate instances of students searching the Web for information, and purple signaled that students were working on entering answers in the worksheet. Certain lines were coded for more than one operation since the transitions between different searching and answering actions were fluid. In these cases, both colors were used. In this investigation, operation types were used as one measure in explaining the use of strategic behaviors.

Step 3: Identifying Language Related Episodes

Swain and Lapkin (1995) have conducted a series of studies of collaborative writing tasks. They identified and analyzed Language Related Episodes, which they defined as “any part of a dialogue where the students talk about the language they are producing, question their language use, or correct themselves or others.” This definition was applied in this investigation even though students were engaged not only in writing, but also in comprehending the worksheet and finding relevant information on German Web sites. In addition to being language-related, episodes that were selected for detailed analysis also had to exhibit “collaborative dialogue, ” which Swain and Lapkin (1998) define it in the following way:

Our exploration takes the form of examining the dialogue that occurred between two learners as they attempt to solve the linguistic problems they face while writing as short narrative. By taking the perspective that the students are using language as a psychological tool, we will need to examine their dialogue for evidence of language being used as a tool in aid of L2 learning (see also Platt & Brooks, 1994). That is we will examine the data for examples of students' use of language that mediates their learning – for example, the use of language to generate and test hypotheses. This is still considered 'output' (Swain, 1995), but it is output used for a cognitive function. It is speaking as a cognitive activity, instantiated in dialogue. (p. 321)

By adopting these definitions of language related episodes and collaborative dialog, the researcher identified instances in which students were focusing on completing the WebQuest and were working out a linguistic problem (generally prompted by a specific unknown word or structure) by talking to each other. The characteristics of selecting episodes are thus (a) occurring during on-task action, (b) representing a significant linguistic obstacle, and (c) exhibiting collaborative dialog. Consequently, off-task actions, instances of immediate problem resolution, or prolonged monologues by one of the students, were not considered in this particular study. Since the research described herein focuses on student interactions, teacher interventions were noted, but not discussed extensively.

All 18 transcripts were searched for episodes fulfilling these criteria, and 91 were identified. Episodes varied significantly in length; however, no quantitative statistics were performed on this type of data. Task 1 yielded 30 episodes, and 31 episodes each were isolated in Tasks 2 and 3. No attempt was made to create equal representation of tasks or dyads. The researcher simply identified and selected all episodes satisfying the operationalized definition.

In order to validate the episode selection process, a second rater was involved in the selection process. After selecting a sample of transcribed data, the second rater independently identified Language Related Episodes. In calculating inter and intra rater reliability the percent agreement method was used. The reliability scores presented here thus represent the number of agreements divided by the total number of units included in the sample (Miles & Huberman, 1994, p. 64). An interrater reliability of 90% was established for identifying episodes. In addition, both raters discussed episodes that had been flagged as questionable by the researcher and each decided whether or not to exclude them from further data analysis. The researcher established intrarater reliability by reexamining all 18 transcripts in order to identify LREs. During this process, the same 91 episodes were selected, thus resulting in 100% intrarater reliability for the selection of LREs.

In their 1998 article about collaborative dialog during collaborative writing tasks, Swain and Lapkin divided Language Related Episodes into lexis-based and form-based episodes. Erben (2001), in his investigation of Japanese immersion pre-service teacher education students, distinguished between form-based and discourse-based Language Related Operations. It should be noted that Swain and Lapkin's Episodes and Erben's

Operations refer to the same unit, a cohesive chunk of transcript during which students exhibit specific mechanisms in pursuit of their goals. While the term “operations” ties in more directly to Activity Theory, “Episodes” will be used in this investigation. Language Related Episodes were categorized according to the three operations identified in step 2 (comprehending, searching, answering).

As indicated in Table 18, comprehending and answering produced similar numbers of episodes (39 for comprehending and 42 for answering), whereas only 10 Language Related Episodes fell into the realm of searching the Web.

Table 18. Overview of Episodes Types by Task

Action	Task 1	Task 2	Task 3	Total
Comprehending	8	14	17	39
Searching	5	5	--	10
Answering	17	12	13	42
Total	30	31	31	91

While the total number of episodes was distributed evenly across tasks, dyads differed greatly in the number of LREs they exhibited (see Table 19). Four of the pairings exhibited between 12 and 17 LREs, which is close to the mathematical average of 15.2, but two dyads fell well outside this range. Only seven LREs were identified in the interaction between R and C, whereas D and C exhibited 26. Within each dyad, the number of episodes per task remained quite consistent: dyads that had a low number of LREs stayed that way throughout all three tasks. For example, R/C engaged in two LREs

during Task 1, three during Task 2, and two during Task 3. Eight LREs were identified for D/C during Task 1 and nine for both Task 2 and Task 3. M/J exhibited the greatest change with three LREs in each of the first two tasks and six in Task 3.

Table 19. Episodes types by dyad and task

Dyad	Operations	Task 1	Task 2	Task 3	Total by Operation
B/F	Comprehending	1	2	1	4
	Searching	2	1	--	3
	Answering	3	3	4	10
	Dyad Total	6	6	5	17
R/C	Comprehending	1	2	2	5
	Searching	--	--	--	--
	Answering	1	1	--	2
	Dyad Total	2	3	2	7
D/C	Comprehending	4	5	7	16
	Searching	2	1	--	3
	Answering	2	3	2	7
	Dyad Total	8	9	9	26
L/J	Comprehending	1	--	2	3
	Searching	1	1	--	2
	Answering	4	4	1	9
	Dyad Total	6	5	3	14
M/J	Comprehending	1	2	4	7
	Searching	--	--	--	--
	Answering	2	1	2	5
	Dyad Total	3	3	6	12
R/T	Comprehending	--	3	1	4
	Searching	--	2	--	2
	Answering	5	--	4	9
	Dyad Total	5	5	5	15

Note. *Dyad Total* represents the number of LRE's per dyad for each of the task. *Total by Operation* indicates the sum of LRE's for each operation by dyad.

Dyads seem to fall into two groups. B/F, L/J, and R/T exhibited an overwhelming majority of LREs within the operation of answering (ten out of 17; nine out of 14; and nine out of 16, respectively). For the other three dyads, R/C, D/C, and M/J, the LREs

during comprehension outnumbered those during answering (5/7, 16/26, and 7/12).

Interestingly, both the dyads composed of two beginners (D/C and M/J) focused more on comprehending, while the dyads with the majority of LRE related to answering comprised the advanced/advanced dyad (B/T) and two mixed proficiency dyads.

Totaling ten out of 91 episodes, the number of LREs during searching was low overall, but it should be noted that there were no LREs in two dyads (R/C and M/J) while searching the Web. This may be attributed to the visual information supporting the online text. Since the online texts were authentic rather than modified for language learners, they may have been either too easy or too difficult for students to engage with the language. However, it seems more plausible that students had a different orientation towards the worksheet and the online text. In general, students engaged more intensely with the operations immediately connected to comprehending the worksheet and entering their answers. Within the educational activity system, the worksheet has a long-standing sociocultural history, while the Internet is a new addition to the process of formal education. Students in this study seemed to view the language on the worksheet as more essential to accomplishing their goal. It might be argued that as a result, interacting with the teacher-created worksheet was in fact more authentic than the online text.

After the data had been processed in this way, the transcripts of each of the episodes were coded for tool use and strategic behaviors in order to answer the specific research questions. The results will be provided in the remainder of this chapter.

The Research Questions

The questions posed in this study cannot easily be answered in isolation since they flow one into the other. Questions 1 and 2 especially can only fully be interpreted in conjunction with each other since mediational tool use and strategic behaviors are part of the overall developmental process. However, as an organizational strategy, the different tools and artifacts students employed will be identified and explained in answering Question 1, while the discussion of strategic behaviors will be reserved for Question 2. Finally, Question 3 will focus on change over time. Each of the questions will now be briefly introduced before they will be answered.

Research Question 1:

What mediational tools do beginning German as a Foreign Language students access to negotiate technology as they work to accomplish collaborative online reading tasks?

This question was concerned with the types of tools (physical and psychological) that students used while completing the three collaborative online reading tasks. The data used to answer this question resided in the transcriptions of the WebQuest on-task actions and resultant verbal interactions.

Research Question 2:

How do beginning German as a Foreign Language students use these mediational tools to regulate their strategic activity during collaborative online reading tasks?

To answer this question, the WebQuest data were analyzed in order to identify strategic behaviors. These strategic behaviors were then related back to the tools that were utilized to deploy the strategies. Of particular interest for the field of SLA is the use of the second language. As part of this investigation, the researcher attempted to find out

whether or not the L2 developed from being the problem to becoming part of the solution, thus developing into a true psychological tool.

Research Question 3:

How does strategic activity through dialogic engagement develop over time?

In order to answer this question, strategic behaviors and types of dialogic engagement patterns exhibited by student dyads were compared over time. Both overall trends as well as dyad specific changes were examined over the eight-week period of WebQuest data collection. The strategic behaviors identified in answering Question 2 were utilized in describing students' dialogic engagement. The results for each question will now be presented.

Research Question 1: Mediatlional Tool Use

Vygotsky divided the tools humans use to mediate their environment into physical tools and psychological tools. When learning a second language, students, do not only need to learn to communicate in a language other than their native language, but they also work toward acquiring the use of a new mediational tool. In this case, students interacted with both English (L1) and German (L2). However, in the beginning stages of second language learning, the L2, far from being a resource or mediational tool, presents the problem itself. During the WebQuest tasks, students needed to comprehend the worksheet, the majority of which was written in German. Students had to search German Websites to find specific information; and they had to provide written answers in German. Despite previous experience some students had had with learning German, their proficiency in the language was generally low. However, these students did have access

to a highly developed system of English listening, speaking, reading, writing, and literacy skills. The use of the psychological tools (English and German) will be discussed first, before turning to physical tools.

Psychological Tool Use: L1 and L2

Based on Vygotsky's notion of psychological tools, the two major resources which students participating in this study had at their disposal to mediate their cognitive processes were their L1 (English) and the L2 (German). Coding for mediational tool use consequently started with these two categories. While the researcher initially accounted only for the different modalities (reading, speaking, writing) in each language, it quickly became apparent that the boundaries between the use of these tools were fluid. Students used both languages in varying combinations of reading, writing, and speaking throughout the tasks.

In order to establish the coding scheme for mediational tool use, three transcripts were coded in their entirety to let a coding scheme emerge from the data rather than superimposing an existing coding scheme (Strass & Corbin, 1998). Through conversations with the second rater, 11 codes were established for coding the psychological tools (L1 and L2). Table 20 provides an overview of these codes, which are then described in more detail. Each of the codes relating to the psychological tools English and German will then be defined and explained with examples.

Table 20. Overview of the Coding Scheme Developed for Psychological Tool Use

Code	Short Description	Student Behavior
L1R	L1 (English) Reading	Students are audibly reading English text displayed on the screen.
L1RI	L1 (English) Reading Internal	It is apparent from the on-screen actions that students are reading English text, but they are not externalizing it.
L1RIL1S	L1 (English) Reading Internal L1 (English) Speaking	While reading (looking at) text in English, students talk about the text in English. This code is distinguished from L1R in that students interpret, evaluate, or comment on the text rather than reading it verbatim.
L1S	L1 (English) Speaking	Students are talking in English without apparent stimuli from the text.
L2R	L2 (German) Reading	Students are audibly reading German text displayed on the screen.
L2S	L2 (German) Speaking	Students are talking in German without apparent stimuli from the text.
L2W	L2 (German) Writing	Students are writing in German not accompanied by spoken utterances.
L2RIL1R	L2 (German) Reading Internal, L1 (English) Reading	Students look at (read internally) German text, which they immediately produce in (translate into) English.
L2RIL1S	L2 (German) Reading Internal, L1 (English) Speaking	While reading (looking at) text in German, students talk about the text in English. This code is distinguished from L2RIL1R in that students interpret, evaluate, or comment on the text rather than attempting a direct translation.
L2SL2W	L2 (German) Speaking, L2 (German) Writing	Students are speaking in German while writing in German.
L2RIVL1S PICTURE	L2 (German) Reading Internal visual, L1 (English) Speaking	Students are relying on pictures provided in conjunction with German text, but they are talking about it in English.

Note. L1W (writing in English) was initially identified as a possible code, but was removed from the coding when no instances of L1W were identified in the transcripts.

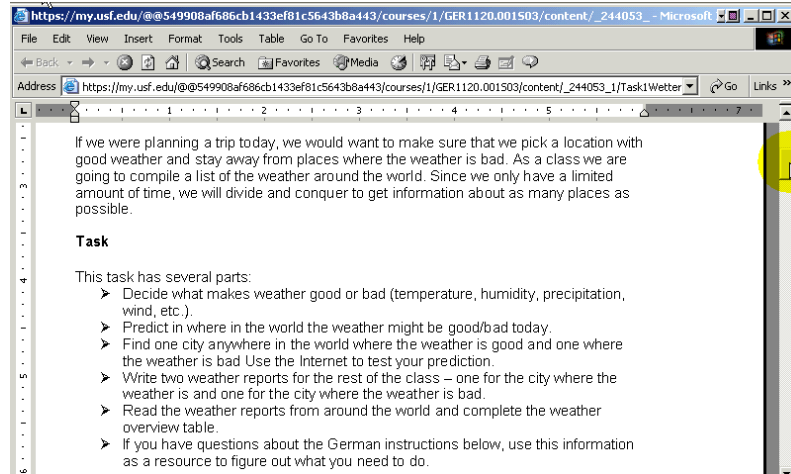
L1R: L1 (English) Reading.

Students are audibly reading English text displayed on the screen. The introduction, task, conclusion, and credits in each of the tasks were written in English. All dyads engaged in some English reading, but students varied greatly in how much of these elements they read aloud. Two examples of L1R are provided below. In the first example (Excerpt 2), D engaged in reading the instructions quickly and softly. The screen capture (Figure 12) displays the text that she was verbalizing in line 79 and illustrates that she kept the cursor located over the scroll bar on the right side of the screen which enabled her to slowly scroll through the text as she moved on (line 84). It is also important to note that line 83 represents a change in mediational tool use, as she was not simply reading the English text, but rather restated it in English, while scrolling to the next section of text. After a short pause (line 85), she then resumed reading aloud in English.

Excerpt 2. T1_D/C

- 79: D: (SOFTLY READING THE INSTRUCTIONS BARELY AUDIBLE)
80: Screen display: first and second paragraphs of introduction and beginning of task
81: Oh, ok...
82: (???) The weather around the world.
83: OK, so we're trying to get information on the weather (BARELY AUDIBLE)
84: Sc very slow (second paragraph of introduction/Task is in center of screen)
85: ...
86: Decide what makes weather good or bad.
87: (???)
88: Write two weather reports...

Figure 12. T1_D/C (3:38)



Note. Line 79

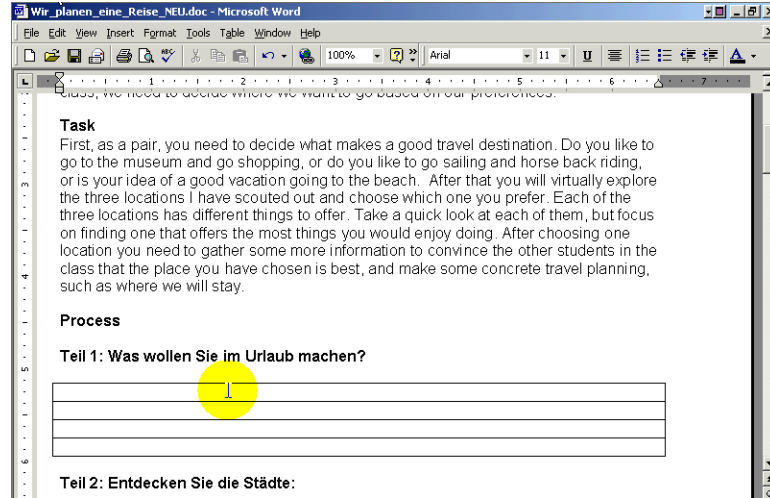
The second example (Excerpt 3) is taken from Task 3 and shows R/C reading the introduction. C took on the role of reading the instructions aloud. She positioned the text on the screen in such a way that the English text was displayed at the top of the screen, whereas the German text and the answer box were already visible at the bottom of the screen. In this instance, the cursor remains static below the paragraph that is being read.

Excerpt 3. T3_R/C

42: sc dn

43: C: Task. First as a pair, you need to decide what makes a good travel destination. Do you like to go to the museum, so shopping, sailing, horse back riding ... beach. After that ... different things to offer...focus on...

Figure 13. T3_R/C (2:00)



L1RI: L1 (English) Reading Internal.

It is apparent from the on-screen actions that students are reading English text, but they are not externalizing it. While the introduction, task, conclusion, and credits in each of the tasks were written in English, most students did not read these elements aloud, but rather scanned them or read them silently (L1 Reading Internal). Scrolling through an English section at a slow pace that would allow students to read the text, and/or cursor circles and pointing with cursor were taken as evidence of this type of reading.

L1RILIS: L1 (English) Reading Internal L1 (English) Speaking.

While reading (looking at) text in English, students talk about the text in English. This code is distinguished from L1R in that students interpret, evaluate, or comment on the text rather than reading it verbatim. Rather than reading the English text provided on the worksheet verbatim, students sometimes restated them (see Excerpt 2), provided

commentary, or evaluated the information. This also occurred when the dyads talked about the information on English Web sites they accessed during the task.

Excerpt 4. T1_M/J

223: ...

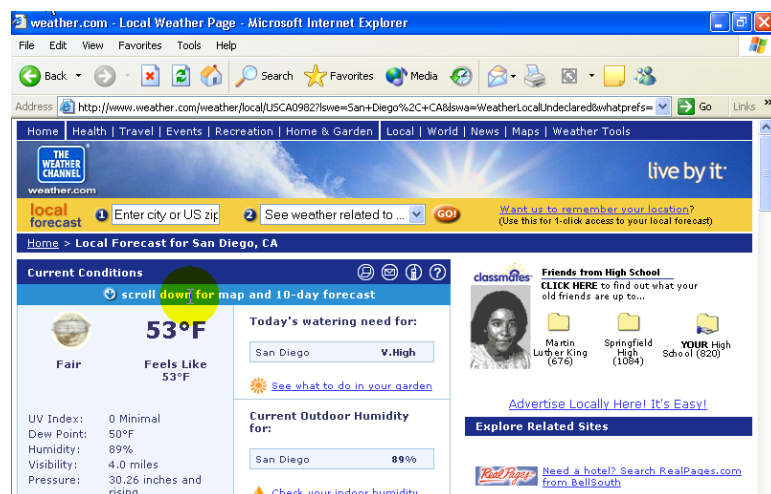
224: tp San Diego, CA in Search teb, hit enter; select tl San Diego, California, United States

225: screen display: weather for San Diego (in English)

226: M: OK. Not bad.

227: J: Yeah, not bad

Figure 14. T1_M/J (13:00)



Note. Line 226

In the example (Excerpt 4), M/J were looking at an English weather site and were commenting about the information presented on the screen. The cursor, which hovered over the temperature, was utilized to point to the information that was being discussed. They were not verbalizing the information, but rather evaluating it. The cursor seemed to act as an extension of hand pointing and focusing attention to specific text elements.

L1S: L1 (English) Speaking.

Students are talking in English without apparent stimuli from the text. Due to their limited proficiency and because they were not required to speak in German, students used their native language for the majority of their interactions with each other. During off-task actions, students predominantly used their L1 for relating personal information, talking about other class assignments, solving computer problems, etc. However, significant amounts of English were also used while solving the WebQuest. The examples provided in this section were selected only from on-task actions and represent some of the strategic behaviors for which students used English. However, the discussion of these strategies will be reserved for Question 2.

In Excerpt 5, R posed a question to himself in an attempt to activate prior schemata that might help him remember the particular word. While this utterance may have been directed at the partner to signal that R had some knowledge regarding this item, it was clearly also self-directed. R is showing evidence of the kind of strategic behavior a teacher might employ in getting a student to remember a word that has already been covered in class.

Excerpt 5. T3_R/T

884 : R: Where have I seen this?

The second example (Excerpt 6) is also a question. However, M's utterance was more clearly directed at the partner and functioned as a suggestion. M and J were in the beginning stage of WebQuest 3 and M suggested scanning the task in its entirety before

starting to answer the questions. By phrasing the suggestion in the form of a question, he enlisted J's cooperation and gave her a chance to share in managing the progression of the task. It is noteworthy that during the first stimulated recall interview, the teacher had encouraged this dyad to start by getting an overview of the task, which they had not done during the previous two tasks.

Excerpt 6. T3_M/J

60: M: Should we look at the whole thing first?

In Excerpt 7, F and B are engaged in a power struggle regarding the task process. Immediately prior to this exchange, they had found the items on the Internet and had moved on to entering their opinions. F was in control of the computer and was composing opinions about these items. The order in which the items were listed on the worksheet was: boots, sweater, armoire, and watch. Without consulting her partner, F started writing a sentence about the watch, which prompted question by B in line 839.

Excerpt 7. T2_F/B

- 839:** B: Why are you talking about the watch first?
840: F: Because it doesn't matter...
841: Change Urh to Uhr
842: B: I thought we were supposed to go in order...
843: F: Pretty.. how do you say? We're not.
844: B: Well (laughs)
845: F: I don't care...
846: B: (laughs) I know
847: F: It has to be done. Let's do it.

Even though posed as a question, it is apparent from line 842 that B was making the

suggestion to start with the first item instead. F, however, insists on following her own path and brushes aside B's suggestion. By stating "We're not" in line 843, she asserts her role as the group leader, which was ultimately confirmed by B. Interactions of this kind, in which students are negotiating the "rules of the game," both in terms of the task and their relationship to each other, were almost exclusively conducted in the native language throughout all tasks and all dyads. This negotiation was not something they were able to conduct via the L2 at this point in time.

Excerpt 8 illustrates that students also expressed uncertainty and supported each other's hypotheses by speaking in English. Prior to the interaction captured in the excerpt, D ventures the (correct) hypothesis that *Stiefel* means boots. C indicates that he cannot confidently judge this hypothesis because he did not study the vocabulary (line 165). D promptly expresses her own uncertainty in line 166. C, however, ultimately accepts her translation because "it sounds right." While discussing a linguistic hypothesis, these two students invited and accepted each other's suggestions and hypotheses through the use of English.

Excerpt 8. T2_D/C

- 165:** C: I haven't studied | the vocab yet, so
166: D: That's a guess (laughs)
167: C: No, that sounds right actually.
168: I think I ... vaguely remember that.

L2R: L2 (German) Reading.

Students are audibly reading German text displayed on the screen. As discussed earlier, some task elements were provided in English, but the concrete steps to be taken in

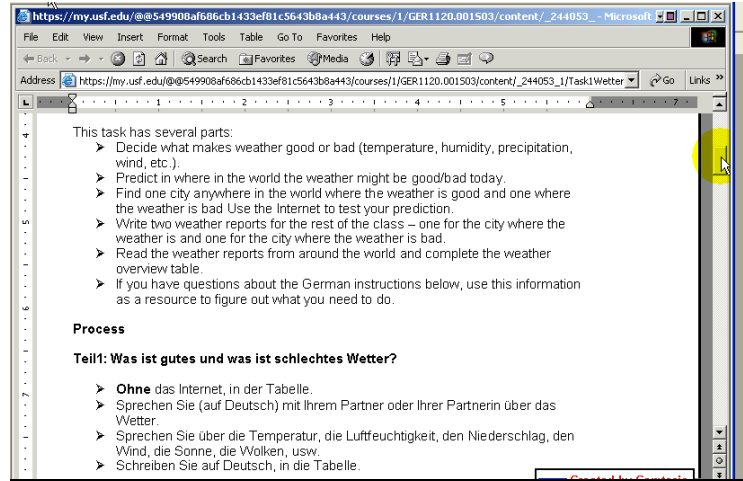
accomplishing the tasks (the task process) were written in German. Students used German Websites to find the information needed to answer questions. Audible reading of German was used extensively by all dyads in the context of a variety of strategic behaviors. Compared to text presented in English, students seemed to have a stronger tendency to verbalize the German instructions and questions.

In Excerpt 9, D reads the section title in two separate utterances, and her partner reads the first bullet of the instructions, which contains an unknown vocabulary item *Tabelle*. In reading the text with a question intonation, he also signals this lexical item as an obstacle. The cursor remains over scroll bar, but no scrolling occurred during this time. Student dyads exhibited a range of scrolling and pointing mechanisms, which seemed to assist in focusing their own or the partner's attention on specific text elements.

Excerpt 9. T1_D/C

- 96: D: This part I won't understand...
- 97: Sc very slowly-----
- 98: Was ist |gutes
- 99: Screen display: Task in center of screen
- 100: C: (???)
- 101: D: Und was ist schlechtes Wetter.
- 102: C: In der tabel?

Figure 15. T1_D/C (4:53)



Note. Line 96

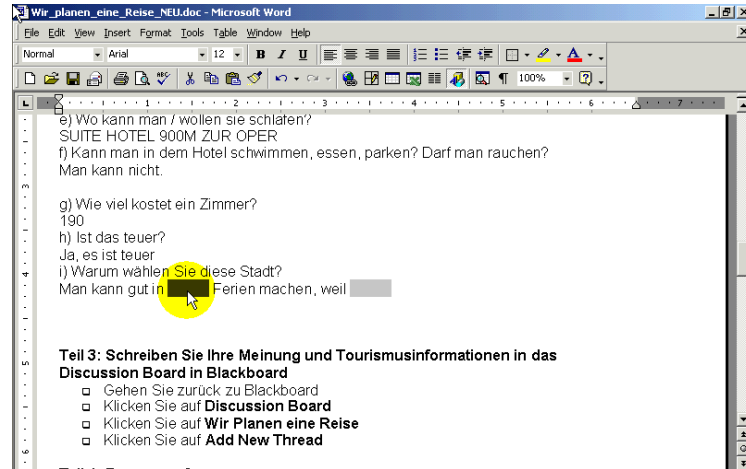
Excerpt 10 features a change in mediational tool use from immediate translation (L2RIL1R) to reading in German (L2R) reading in one line (line 1220). This shift occurred presumably because of the unknown word *wählen*. F first repeats the entire sentence before focusing in on the lexical item that seemed to cause a loss of self-regulation. The cursor remains static over the text entry box during this time, while in lines 1242 and 1243 the cursor follows the reading process.

Excerpt 10: T3_F/B

1219: sc dn
 1220: F: ahm. Why wählen Sie diese Stadt
 1221: cr over I)
 1222: ...
 1223: pages being turned
 1224: Warum wählen Sie diese Stadt
 1225: Cl teb
 1226: Wählen?
 |
 |
 1240: B: so
 1241: Why...
 1242: F: Warum wählen sie diese Stadt

1243: Cr follow along

Figure 16. T3_F/B (43:40)



Note. Line 1221

L2S: L2 (German) Speaking.

Students are talking in German without apparent stimuli from the text. In addition to verbalizing German text presented to them, students also used spoken German in other contexts: making suggestions to the student in control of the computer, asking for translations, and even praising each other on occasion in German. Furthermore, expressing numbers also provided an impetus for speaking German. Since numbers are neither inherently German nor English it is remarkable that some dyads chose to state numbers in German without having been instructed to do so.

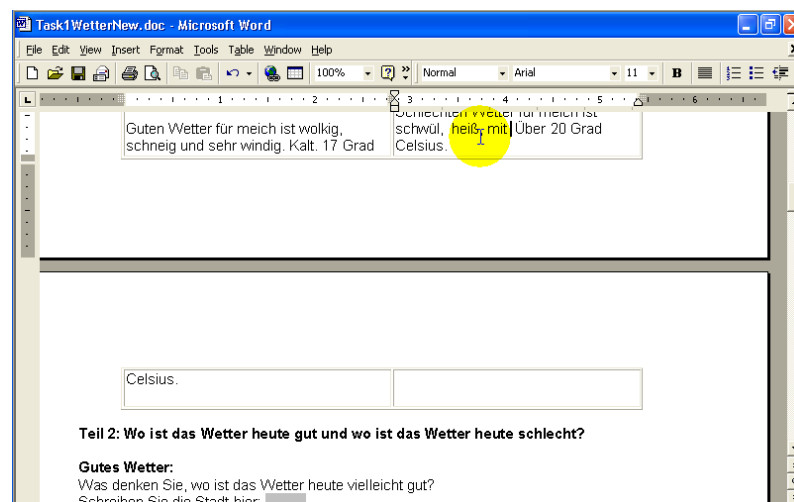
In Excerpt 11, R tries to write the German equivalent of “with a temperature of...,” but does not know the gender of the German word *Temperatur*. R, who was in control of the computer at this time, had already produced several elements of the sentence (see Figure 17). In order to compose the German equivalent of “a temperature,”

R needed to identify whether the German noun *Temperatur* is masculine (*der*), feminine (*die*), or neutral (*das*). Even though ultimately she looked for an indefinite article rather than a definite article, R applied a technique commonly employed by the classroom teacher, namely listing aloud the definite articles (*der, die, das*) to identify the correct gender via aural prompting.

Excerpt 11. T1_R/C

292 : R: Is it *der*, *die*, or *das*?

Figure 17. T1_R/C (14:24)



In Excerpt 12, D and C are trying to comprehend the German instructions provided in the Process of Task 2. C initially translates the sentence into English (L2RIL1R). However, when he comes across the word *Stiefel*, which he was unable to translate, he reads it aloud (L2R). The cursor (cr) follows along while C translated the German text directly into English and then stops on the word *Stiefel*. While pointing to

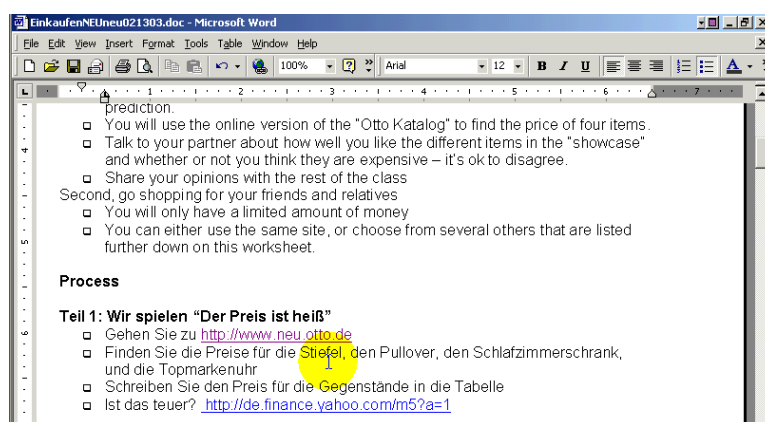
the unknown word with the cursor, he then asks a genuine question in German: *Was ist Stiefel?*, which translates into “What is boots” (line 161). As in the previous example, this is a structure that was commonly used by the teacher when eliciting translation equivalents in the classroom.

Excerpt 12. T2_D/C

161: C: Find (E) Price for *Stiefel*... *Was ist Stiefel*.

162: Cr follow along cr over *Stiefel*

Figure 18. T2_D/C (06:20)

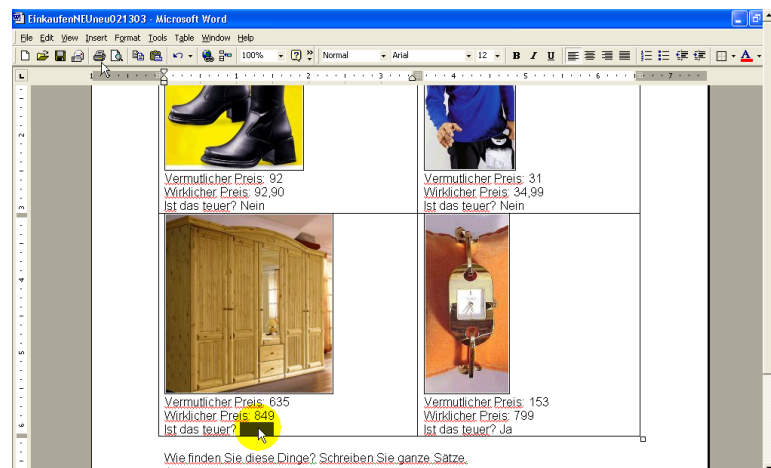


The third example of students speaking in German (Excerpt 13) depicts M and J working together towards task completion entirely through speaking and writing in German. M and J were deciding whether the articles in the showcase were expensive. They had already guessed the prices, located the items on the German online shopping site, and were deciding what to enter into the text entry boxes provided for them.

Excerpt 13. T2 M/J

- 522: M: **nein**
523: Tp **nein** for boots
524: **Nein.**
525: Tp **nein** for sweater
526: ...
527: J: **Ja** (laughs)
528: M: **Ja**
529: Tp **Ja** for watch
530: J: | **Nein**
531: M: **Nein**
532: Tp **nein** for armoire; sc dn

Figure 19. T2 _M/J (19:34)



Note. Line 532

At the outset of this example, M, who is controlling the computer, engages in simultaneous speaking and writing (L2WL2S). He verbalizes what he is about to type. In this way, he was both mediating his own cognitive processes, but also giving J an opportunity to participate in the task. In line 527, J suggests an answer for the watch, which is repeated by M, who accepts and types the answer. For the final answer, the armoire, both J and M state the answer simultaneously while M enters it into the

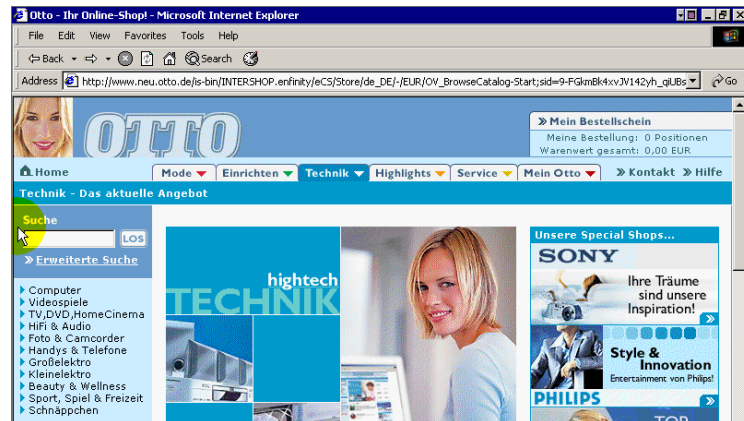
worksheet. During this interaction, students were successful in completing the task without the use of any English.

The final example (Excerpt 14) of L2S depicts L and J searching for the watch on the online shopping site. Rather than using the text links and buttons providing access to the various store departments, this dyad utilizes the search function found on most Websites. Even though the words *Suche* and *Los* were most likely unfamiliar to the students, the function of the search box seemed immediately apparent to all students in this class. Prior to the interaction provided, J had already searched for *Topmarkenuhr*, the word used in the listing of the items, which did not produce any results. Consequently, this dyad decided to search for the base term “wristwatch.” J seems to remember that the German word is a compound noun comprising the words for “wrist,” “band,” and “watch” (L1S) and ventures a German suggestion in line 622, *uhr der arm* (watch of the arm), and again in line 624 *Uhrarmband* (watch wrist band). The cursor remains over the search box until J starts typing in line 625. However, at that time, L suggests the correct word *die Armbanduhr*.

Excerpt 14 : T2_L/J

620 : J: Oh. Watch on wrist...wrist band... on the wrist; watch on wrist *uhr...uhr der arm?*
621 : *Cl back button*
622 : L: uhum
623 : ...
624 : J: *Uhrarmband*
625 : *Tp uhr*
626 : L: *die Armbanduhr*. You're close

Figure 20. T2_L/J (24:36)



Note. Line 624

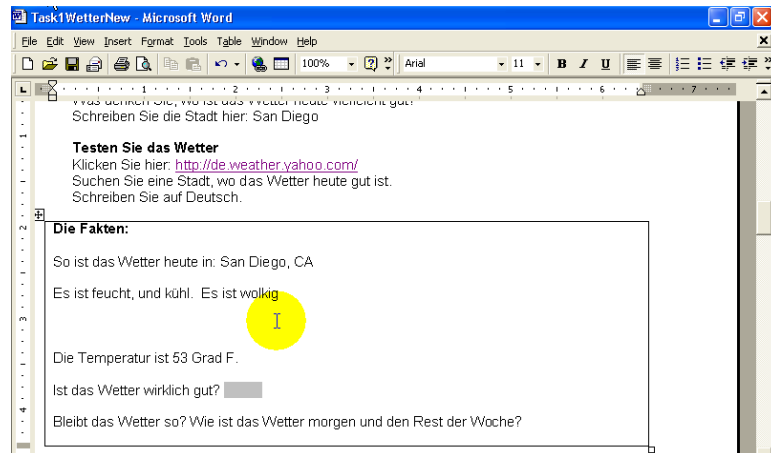
L2W: L2 (German) Writing.

Students are writing in German unaccompanied by spoken utterances. Instances of silence were often accompanied by actions on the screen; for example, entering answers on the worksheet. In Excerpt 15, M/J are working on Task 1. M controls the computer and types the weather facts for San Diego into the worksheet. This type of solitary writing tended to happen when the student in control of the computer was also the dominant person in the group, and either more proficient in German or more confident in his or her German ability.

Excerpt 15. T1_M/J

281: ...
 282: ...
 283: tp Es ist wolkig

Figure 21. T1_M/J (15:05)



L2RIL1R: L2 (German) Reading Internal, L1 (English) Reading.

Students look at (read internally) German text, which they immediately produce in (translate into) English. While working on comprehending the task process which was presented in German, students frequently resorted to immediately translating the German text into English. This occurred while reading instructions and questions on the worksheet that seemed unproblematic for the students. However, this process also assisted them in identifying problems when they were unable to produce an English translation. This, then, served as a way to enlist the partner's cooperation in comprehending a text element.

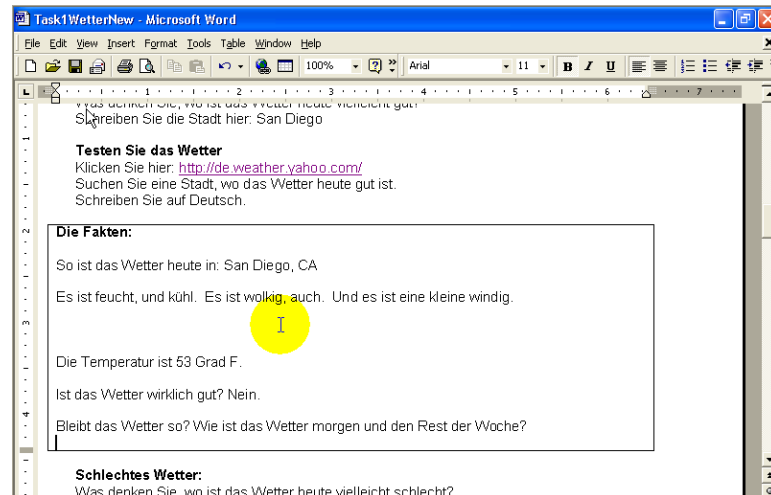
In the example (Excerpt 16), M and J are trying to comprehend the question about the weather forecast. In line 326, M reads the problematic word in German (L2R) and also starts reading the next sentence when he seems to realize that he is capable of translating this sentence into English. As in this example, L2R and L2RIL1R often occurred in the same utterance as students' regulation over the linguistic context shifted.

Excerpt 16. T1_M/J

326: M: **Bleibt**

327: **Wie ist...** what is the weather tomorrow and... the rest of the week

Figure 22. T1_M/J (17:19)



L2RIL1S: L2 (German) Reading Internal, L1 (English) Speaking.

While reading (looking at) text in German, students talk about the text in English.

This code is distinguished from L2RIL1R in that students interpret, evaluate, or comment on the text rather than attempting a direct translation. Rather than attempting a translation of the text into English, this code indicated that students spoke about text elements.

Students utilized this type of mixed tool use either when talking about or commenting on the instructions and questions on the worksheet, or when looking at the German Web sites. During these periods, they tended to focus more on interpreting the content rather than on translating the text. Transitions from L2RIL1R to L2RIL1S were fluid and frequent, which is evident in Excerpt 17.

In line 640, R initially sets out to read the question in German (L2R); however, after only the first word *Wie* she seems to have an insight, and exclaims “Oh!” before restating her understanding of the question. Rather than providing a word for word translation, this is a paraphrase. A similar sequence was found in line 641. Again, R starts reading the German word *Wie*, followed by an English expression signaling an unknown phrase or word, before she provides a translation accompanied by instances of L1S. Her cursor movement indicates that she was focusing on the word *schreiben*, which she subsequently translates correctly. The cursor circles (line 642) may be an external indication that she was ready to move on to the next task element.

Excerpt 17. T2_R/C

- 640: R: Ok. **Wie**. Oh! It’s like asking what you think...
- 641: **Wie**, thing-a-majiggers ...and then write... I guess like, write a statement about it.
- 642: **cr over Schreiben** **Big cr circles over entire screen**
- 643: C: Yeah
- 644: R: I’m assuming... I could be really wrong...

Figure 23. T2_R/C (21:04)

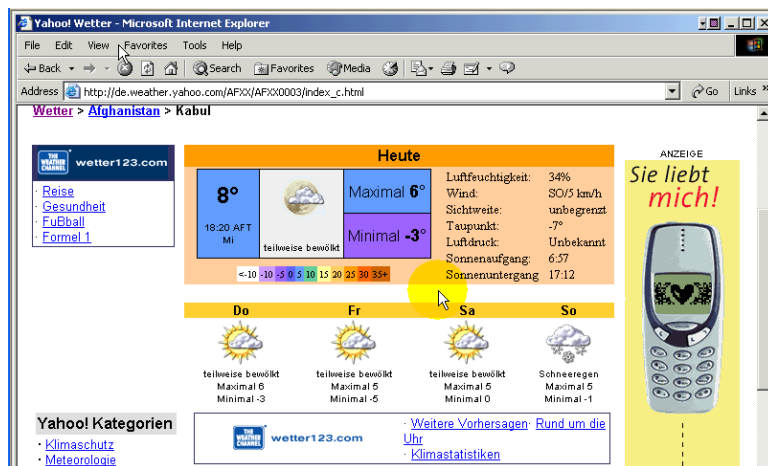


The second example (Excerpt 18) illustrates students evaluating information they found on the German weather site. In line 427, C is engaged in paralinguistic utterances and moves the cursor over the screen in large circles as he ponders whether the temperature is presented in Celsius or Fahrenheit. D searches for clues on the screen and shares her comments with her partner in English.

Excerpt 18. T1_D/C

- 427: C: hm... da,da...
 428: ...
 429: [cr circles \(searching\)](#)
 430: D: No it can't. It can't be Fahrenheit cause ...
 431: Oh, that's future weather.
 432: I don't know.

Figure 24. T1_D/C (16:42)



L2SL2W: L2 (German) Speaking L2 (German) Writing.

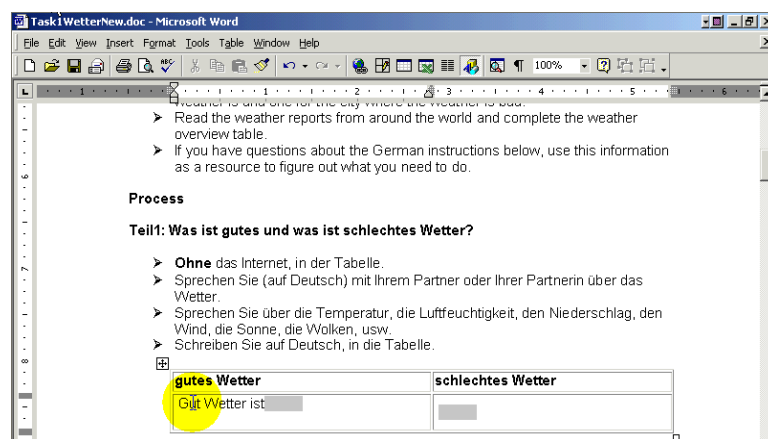
Students are speaking in German while writing in German. More frequently than composing in silence (L2W), students verbalized either what they were going to write or what they were writing. Generally, either the student in control of the computer accompanied his or her own writing or the partner's utterances were immediately typed onto the worksheet. In other situations, the partner reread and/or anticipated the answer.

The example (Excerpt 19) illustrates several instantiations of L2SL2W. J and L are composing their answer describing good weather, with J in control of the computer. As J suggests what he would like to write in line 52 (L2S), L overlaps with the same suggestion and reads along as J types on the worksheet.

Excerpt 19. T1_L/J

52: J: Gut |Wetter
53: L: Gut Wetter
54: Gut wetter iss
55: Tp Gut Wetter ist

Figure 25. T1_L/J (36:26)



Note. Line 54

L2RIVL1S – PICTURE: L2 (German) Reading Internal plus visual, L1 (English) Speaking.

Students are relying on pictures provided in conjunction with German text, but they are talking about it in English. The texts which was provided to the students contained images in addition to words. Although images and graphics are naturally embedded in socio-historical context, they are not inherently part of any language system. When students were drawing primarily on visual information presented in conjunction with German text, the label L2RIVL1S was used. Images mediated comprehension both on the Internet, which is a graphics-rich environment, and on the worksheet.

In Excerpt 20, L and J evaluate the weather information provided for Victoria Falls. The fact that they were talking about the lightning storm predicted for Saturday is evidenced by L reading the word *Gewitter* (L2R) in lines 522 and 525, by the location of the cursor, and by J's description of the graphic in line 529. Students in this example were not able to deduce the meaning from the graphic and ultimately asked the teacher for a translation.

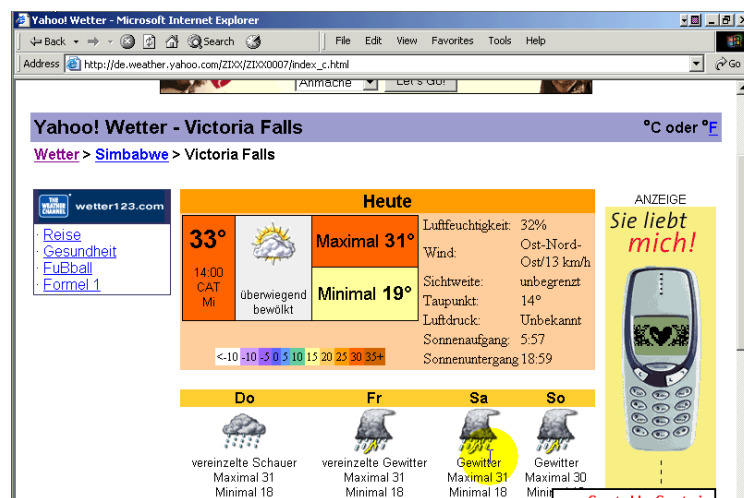
Excerpt 20. T1_L/J

- 520: L: OH
521: J: Oh, my goodness gracious
522: L: *Gewitter*
523: J: What is that?
524: *Cr over Thunder cloud for Friday*
525: L: *Gewitter*... I want to know what that is.
526: *Cr over pictures for Friday and Saturday---*
527: J: That's a funky looking cloud, man, that looks vicious, too
528: -----
529: L: Lightning...thunder...I want to know what that is. *Gewitt.. Gewitter*
530: -----
531: Oh my gosh, I want to know what this word is, and I want to know *Ge Gewitter*

532: J: That looks nasty.

533: L: Very much so.

Figure 26. T1_L/J (21:19)



Note. Line 526

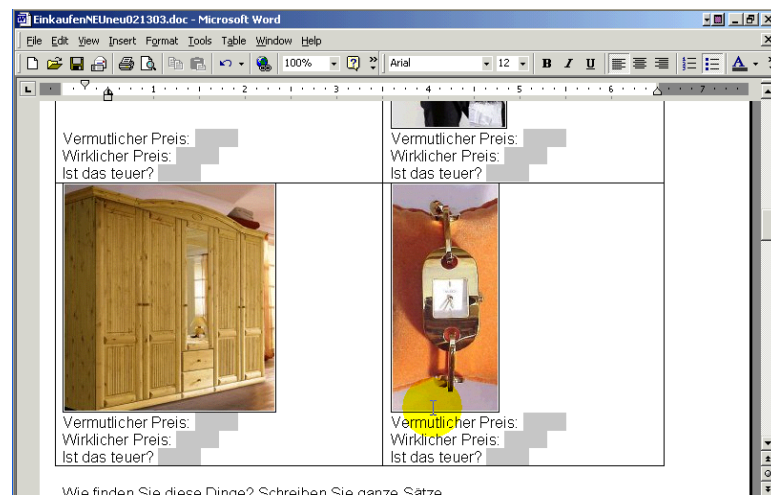
In the second example (Excerpt 21), the graphics provided on the worksheet lead D and C to comprehend German lexical elements. D and C were confident about their translations for *Topmarkenuhr* and *Schrank*, which were used in the German task process of WebQuest 2. However, once they locate the table, the pictures provide an opportunity for them to check their initial hypotheses.

Students made use of both their L1 (English) and the L2 (German) in their attempts to access the linguistic obstacles presented to them in the three WebQuest tasks. Rather than consistently favoring any one language or modality, students employed different combinations of tools from their tool box based on the obstacle and the level of regulation they had over the task at hand. The next section will present physical tool use.

Excerpt 21. T2_D/C

- 278: D: ahh
279: C: Ah, she put pictures...
280: D: I don't know that one (?)
281: C: Ah!
282: D: Ahhhh... What's that
283: C: It's | a watch.
284: D: This is a watch...
285: cr over picture of watch
286: C: And you had boots right. Very good
287: D: ok.
288: C: And I had the... this right.
289: Cr over picture of armoire

Figure 27. T2_D/C (10:28)



Note. Line 285

Mediational Artifacts

Physical tools, also known as mediational artifacts in Activity Theory, frame the activity because they change how human beings solve problems. For example, solving a complicated math problem is framed differently by (a) a calculator, (b) pen and paper, or (c) no physical tools. In the context of this study, physical tools included a dictionary, the computer, the worksheet, and a tip sheet. The physical tools that were available in the

environment and how students applied them towards the problem solving tasks shed light on the developmental process. Using the computer shaped the WebQuest as a whole. The WebQuests transplanted students from their regular classroom into the computer lab. Spaces have socio-politically assigned significance. The way classrooms are designed and arranged frames the types of activities and interactions that can take place. A lecture hall, for example, given its arrangement of chairs fixed in rows facing the front of the room where a teacher podium is prominently placed, is framed within a conceptualization of education in terms of teacher-fronted presentations. The class described in this study normally met in a standard classroom featuring approximately 40 movable desks organized in rows that filled the entire classroom space. The front of the room featured a white board, a computer console, and an overhead projector. Even though typical class sessions included teacher-fronted presentation of vocabulary and grammar, pair and group work was incorporated into virtually every period. The classroom arrangement made this process challenging at times, since it was difficult to move chairs or to create open spaces in which students could move about. Going to the computer lab was a departure from the norm of this course, and its arrangement was even more inflexible than the standard classroom.

During sessions conducted in the classroom, students mainly used their textbooks, notebooks, pens, and pencils, but also poster paper and markers. During WebQuest sessions, on the other hand, students mainly interacted with computers, as they were the means through which the students accessed the worksheet, searched the Web, and recorded their answers. The computer, thus, acted as a mediational artifact much like a pencil or notepad. The fact that one-third of all off-task actions were related to computer

management points to the fact that students were still less self-regulated in the use of this tool. This seems to contradict the prevailing attitude amongst instructors that students do not require training in basic computing tasks, such as using word processing software and searching the Web. In the next section, instances of using mediational artifacts will be illustrated.

Computer.

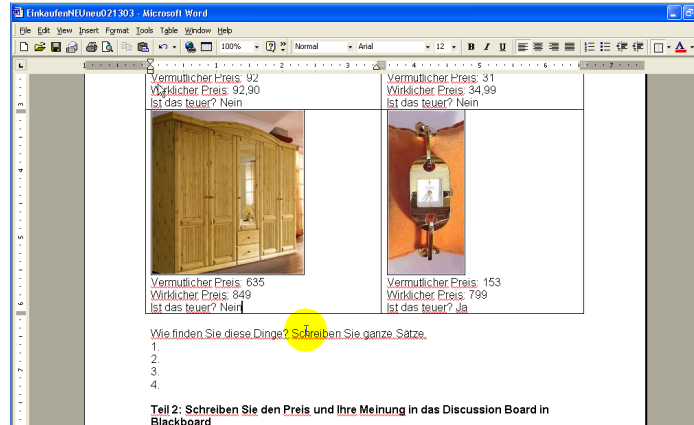
The first example (Excerpt 22) illustrates L2 reading that is accompanied by using the cursor to point to each word as it is being read. This is reminiscent of beginning readers using their finger to stay on a specific line of text. Other research has shown that when reading online text, it is more difficult to maintain a consistent focus on textual elements. Consequently, this action could be either directed at the reader himself, who happens to be the one in control of the mouse during this time, or at the partner to clarify which words he is reading. In any event, pointing to textual elements does contribute to establishing a shared referential space with the partner.

Excerpt 22. T2_M/J

534: M: Wie finden Sie diese Dinge?

535: Cr follow along

Figure 28. T2_M/J (19:40)

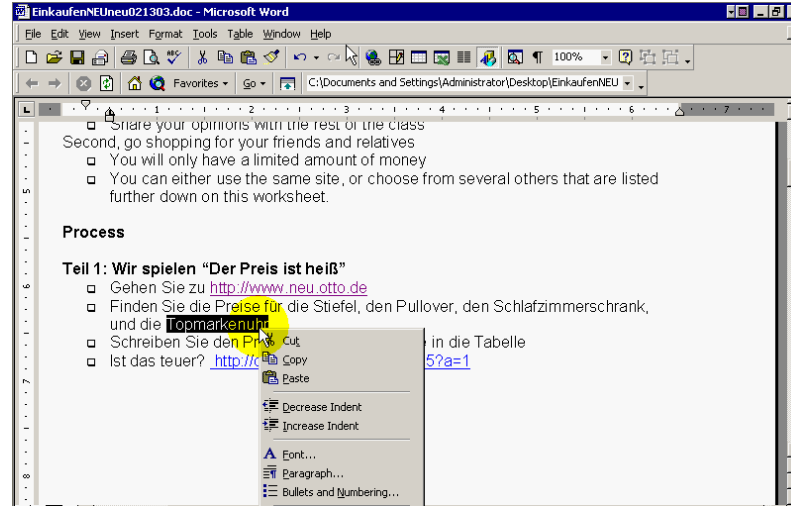


In Excerpt 23, M and J were searching the online shopping site for the watch. Rather than typing the word on his own, J decides to copy the word *Topmarkenuhr* from the worksheet (line 609) and to paste it into the search text entry box (line 611). Not only is J aware of the way the search function generally works on Websites, he is also able to use the computer in a way that lowered his cognitive burden in trying to remember the correct spelling of a multisyllabic unknown word. This strategy did not result in successful retrieval of this item, but this dyad used the copy/paste technique successfully for finding the armoire.

Excerpt 23. T2_L/J

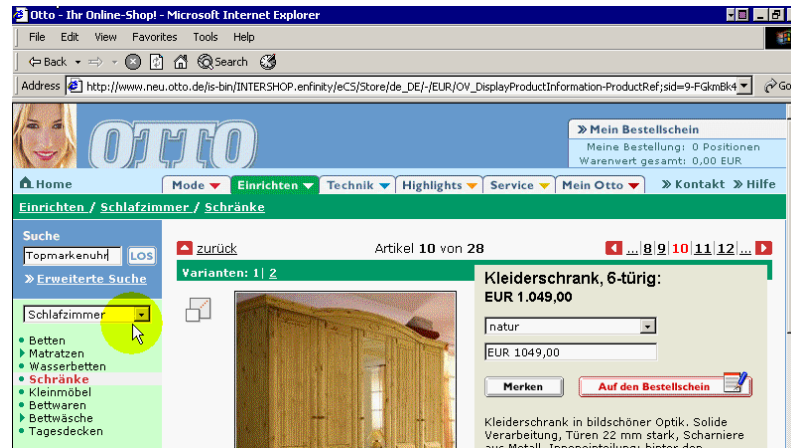
606: L: **Top marken uhr Top marken uhr**
 607: I wanna know how much that is
 608: **Topmarkenuhr**
 609: **Copy text**
 610: ...
 611: mwt Otto, paste text into teb Suche; no search results

Figure 29. T2_L/J (23:53)



Note. Line 609

Figure 30. T2_L/J (23:58)



Note. Line 611

Online Dictionary.

In addition to the pocket dictionaries most students had brought with them to this class period, one dyad also made use of a free online translation service. Excerpt 24 illustrates a variety of strategic behaviors M and J employed in identifying the meaning of *bleibt*. After pronouncing the word (line 326), reading the context (line 327), and directly asking for a translation (328), M assigns the task of looking the word up in the

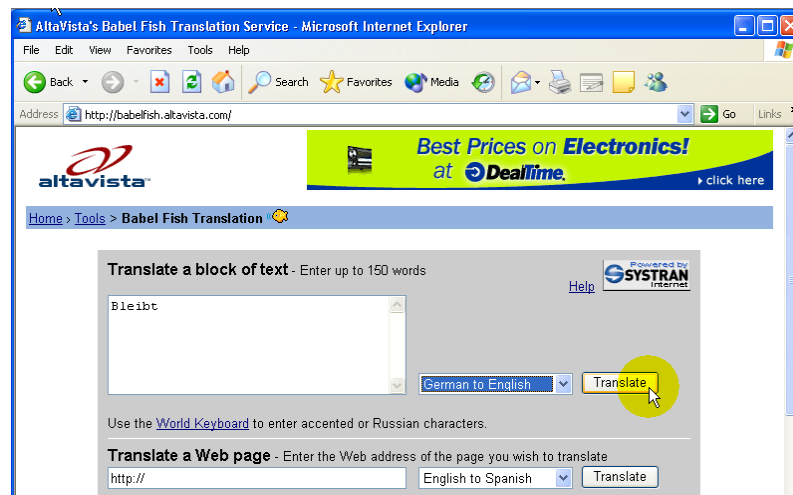
dictionary to his partner (329). J is unsure of her findings and employs her interlanguage knowledge in attempting to find the base form (lines 337 and 338). Since the teacher was not available at that time (line 339), M turns to an online translator (line 342). J recognizes the tool, and both students seemed aware of the problematic nature of using online services to find translation equivalents (lines 346 and 348). In the Personal History Interview, M called himself an “Internet geek” and mentioned that he had used the Internet before for translating text. In this case, the online translator provided the correct English word (remains) for *bleibt*, which is a conjugated form of the verb *bleiben*. The reason J was not able to locate the appropriate translation in the paper dictionary was that she did not know the base form (infinitive) of the verb (line 337). By using an online translator which accepts conjugated forms of verbs, students were able to retrieve the conjugated English form, which gave them access to the word’s meaning. Interestingly, these students did not trust the translation and ultimately asked the teacher for help when she came by their workstation at a later time.

Excerpt 24. T1_M/J

- 326: M: **Bleibt**
 327: **Wie ist...** what is the weather tomorrow and... the rest of the week
 328: I guess... What is **bleibt**?
 329: You can do that one.
 330: ...
 331: **cr circle, slight sr dn**
 332: ...
 333: J: Ahm...I don’t know if that’s right there
 334: ...
 335: M: Oh, hold on
 336: ...
 337: J: Because it looks like a different form of this, right?
 338: M: Yeah, or or a verb like that
 339: Maybe we can ask her when she comes by... or...
 340: **CI IE icon in bottom menu**

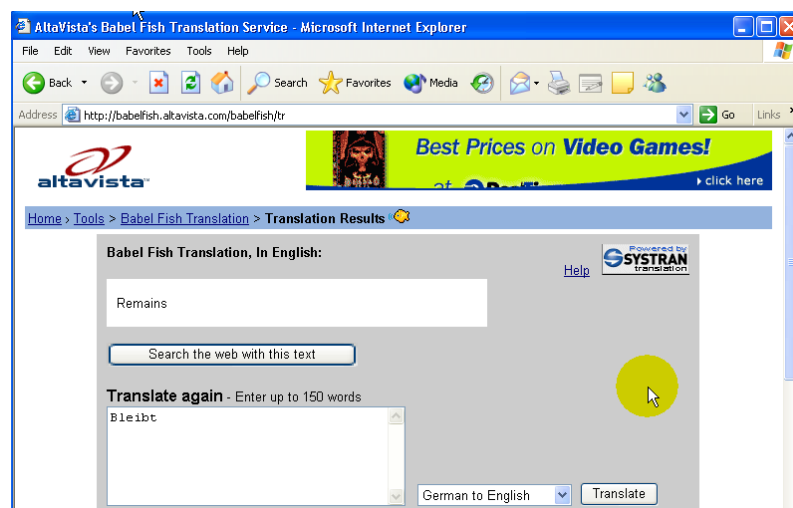
341: ...
 342: cl stop icon; cl URL; tp babelfish.altavista.com; hit enter
 343: J: Oh yes. This is the translation thing
 344: ...
 345: tp Bleibt; dl bit; tp ibt; select German to English;
 346: M: This is always wrong though, remains
 347: cl Translate
 348: J: Yeah it is. I tried it too

Figure 31. T1_M/J (18:34)



Note. Line 345

Figure 32. T1_M/J (18:36)



Note. Line 347

WebQuest Worksheet.

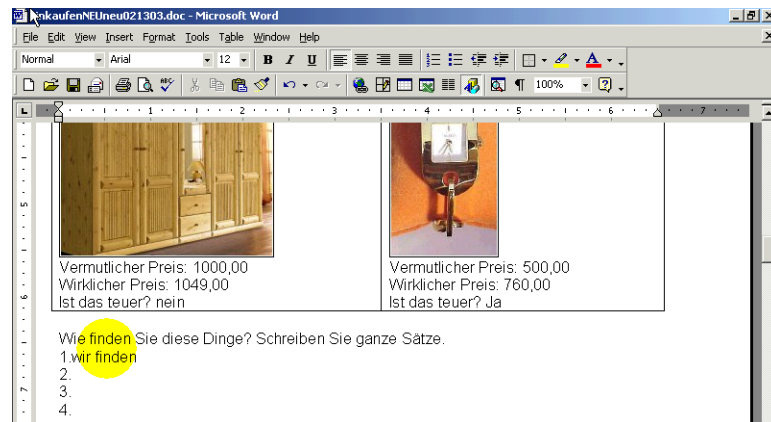
The WebQuest, while presenting the problem to be solved, also provided opportunities for students to facilitate their task completion. Rather than referring back to the English Introduction and Task when they had doubts about the German Process, students more frequently utilized the German instructions to mediate their attempts at composing answers in German. In Excerpt 25, F and B are working towards expressing “we think the watch is pretty but expensive” when they realize that they are unsure of the grammatical gender of *Uhr* (watch). Initially F employs aural prompting (line 823) to decide between two options and to enlist B’s help. When B is unable to provide the gender and, in fact, turns his attention to another lexical item, F scrolls up to the place in the German instructions that provide the list of items students were asked to locate (line 832). Stating the article (line 834) is self-directed and seems to facilitate her ability to remember the word as she scrolls back down to complete the sentence she had been working on (line 835).

Excerpt 25. T2_F/B

821: F: Wir... finden...
822: Tp Wir finden
823: is it die Uhr, das Uhr?
824: Heh?
825: B: Uhr?
826: F: Uhr.
827: Der Uhr?
828: B: no
829: F: Die Uhr?
830: B: Was ist Stiefel?
831: ...
832: sc up to German instructions
833: Die Stiefel.
834: F: Die tab... ok.

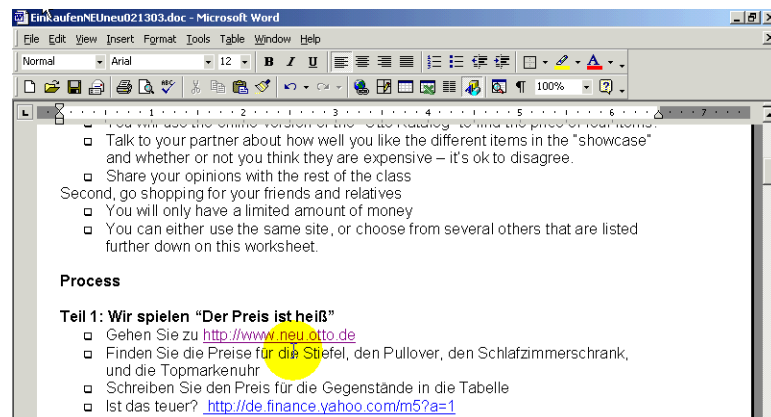
835: Sc dn to opinion
 836: Die die Uhr...
 837: Tp die Urh
 838: Die Uhr...

Figure 33. T2_F/B (26:20)



Note. Line 827

Figure 34. T2_F/B (26:27)



Note. Line 833

Dictionary .

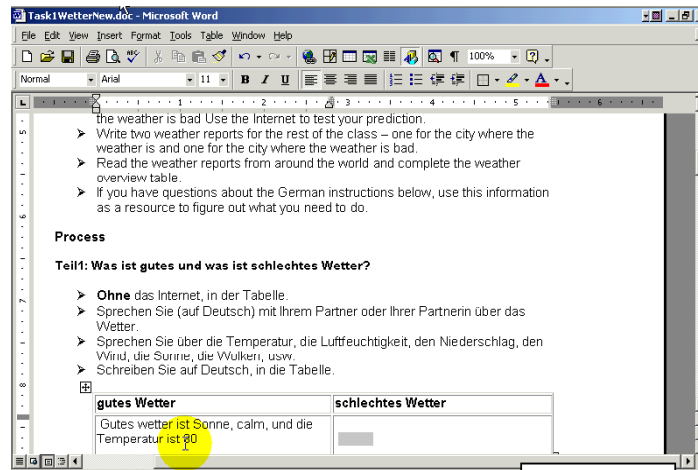
Unexpectedly, the textbook came bundled with a pocket dictionary students brought to the WebQuest sessions. All dyads used the dictionary, some extensively. In this example, R and T are composing their answer for good weather. R had already

written “*und die Temperatur ist 80*” (and the temperature is 80), and is trying to add the word “degrees” to complete the sentence. In line 298, he enlists his partner’s help, who immediately offers to look the word up in the dictionary (line 299). T locates the correct word, *Grad*, in line 309, but even though R is willing to accept this translation, T does not have confidence in his suggestion. Ultimately R decides to avoid the lexical item altogether (line 317) and resorts to using the abbreviation “F” instead.

Excerpt 26. T1_R/T

298: R: I don’t know how to say degrees.. but then I got the little circle on here
299: T: ahm, yeah, English dictionary right here
300: R: Alright
301: T (laughs)
302: R: degrees, look up degrees
303: ..
304: pages turning
305: *achtzig* ... *achtzig* degrees
306: *cl* *teb schlechtes Wetter*
307: *schlecht*... *schlechtes Wetter*
308: *cr* *over schlechtes Wetter*
309: T: *Grad*
310: R: How do you spell that
311: *Cl* *after 80*
312: T: Oh, that’s ahh that’s (???)
313: That’s more like...
314: It’s talking about like an actually degree like a college of preparatory school
315: R: ok
316: T: We can try it...
317: R: Nahh, fuck it
318: 80, that’s good
319: 80 F
320: *tp* *F*
321: T: Yeah, don’t worry about it (laughs)

Figure 35. T1_R/T (10:00)



Note. Line 298

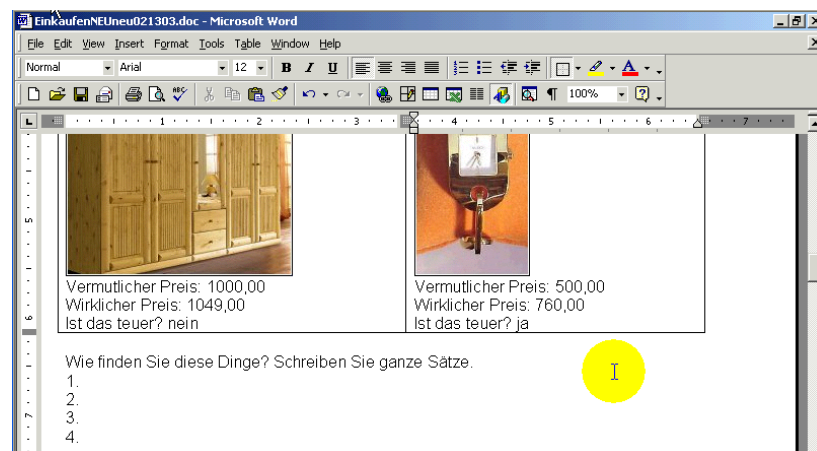
In the next example (Excerpt 27), F and B come across the unknown word *Dinge* while reading the instructions. F enlists support indirectly through raised intonation (line 784) before directly asking for a translation (line 786). When reading the context does not provide the answer, she (correctly) hypothesizes that it means “articles” (line 790), but decides nonetheless to use the dictionary. In line 803, she states her finding and asserts it again in line 805 before integrating it into its context.

Excerpt 27. T2_F/B

- 784: F: Wie findest sie diese... Dinge?
 785: B: (???)
 786: F: What is Dinge?
 787: B: (???)
 788: F: Schreiben Sie ganz Sätze...
 789: B: (softly) Schreiben Sie ganze Sätze
 790: F: Dinge... is that article?
 791: ...
 792: Schreiben Sie ganz Sätz...
 793: ...
 794: B: Dinge...
 795: F: Ok. Hm
 796: ...

797: B: Schreiben Sie ... Preis und ... ihr
 798: ... Blackboard...
 799: ...
 800: pages being turned
 801: Gucci (?)
 802: ...
 803: F: It's a thing. Dinge...
 804: B: Did you find it?
 805: F: Ding...is a thing.
 806: Wie finden Sie diese Dinge?

Figure 36. T2_F/B (24:29)



Note. Line 784

Having illustrated the mediational tools students accessed in negotiating the collaborative online reading tasks, strategic behaviors will be illustrated in the next section.

Research Question 2: Strategic Behaviors

All episodes were coded according to strategic behaviors: how students used the psychological tools and mediational artifacts while completing the WebQuest tasks. Following a grounded theory method (Strauss & Corbin, 1998), the investigator allowed the codes to emerge from the data rather than applying existing coding schemes. This process was iterative, which means that the coding scheme was constantly checked

against the data by recoding data samples. Whenever a problematic instance was encountered which called into question either the definition or consistency in coding, the entire set of transcriptions was recoded and/or the definition was refined. At times, this led to combining two codes into one; at other times, one code had to be divided into two or more separate codes. The investigator kept a reflective log of the coding process to track the development of the coding scheme. In addition, several consultations with the second rater served as opportunities to explain and discuss definitions through examining coding samples. These sessions were invaluable not only for the development of the coding scheme but also led to the emergence of categories, which are part of the explanatory framework used in the discussion of the results.

Strategic Behavior Coding Scheme

During the initial coding process, the researcher attached descriptive labels to elements in the transcripts. Codes could be assigned to any chunk of text, at the word or utterance level or beyond, and were not organized in a hierarchical manner. If more than one code seemed appropriate for a given element, multiple coding was allowed, as long as the codes were neither redundant nor contradictory. Since strategic behaviors related to different aspects of the task, in the initial stages coding was prolific and not constrained by categories. After several iterations of checking the coding scheme with the data, refining the list of codes, and recoding the data, the coding scheme was presented and explained to the second rater. Through this dialogic process, the coding scheme and descriptions were further refined and any necessary changes were applied to the coded data. Finally, a sample of data was coded by the second rater to establish interrater

reliability. Initially the agreement was 85%. However, in discussing negative cases, it was determined that two codes needed to be combined, which increased the reliability to 95%. In addition, five of the 91 episodes (5.5%) were recoded by the investigator, with a 91% intrarater reliability.

Through the intense engagement with the data, the 82 strategic behaviors that were eventually identified through coding, fell into a number of clusters, or categories (see Table 21). Establishing categories facilitated access to the data and enabled the researcher to identify trends and tendencies. Again, an iterative process was employed in identifying five categories: affective, contextual, socio-procedural, cognitive, and other strategic behaviors.

Table 21. Overview of Categories for Strategic Activities

Category	Subcategories
Affective	Destructive Constructive
Contextual	---
Socio-Procedural	---
Cognitive	Mediating own regulation of L2 tool use Mediating partner's regulation of L2 tool use Mediating collective regulation of L2 tool use
Other	---

Affective strategic behaviors (see Table 22) are those relating to emotional states of individual students and their relationship to each other, and were divided into destructive and constructive subcategories. Destructive behaviors are detrimental to the

dialogic engagement and task completion and were instantiated as indifference towards the task, impatience, frustration, and giving up, as well as challenging the partner's authority and ignoring suggestions made by the partner. Constructive behaviors, on the other hand, promoted a positive collaborative environment and assisted students in progressing toward task completion. It comprises humor, praising and courtesy, as well as supporting the partner in his or her problem-solving, and accepting actions taken by the partner.

Table 22. Affective Strategic Activities

Code	Description
DESTRUCTIVE	
Indifference	Being indifferent towards the task
Ignore	Ignoring the partner
Impatient	Expressing Impatience
Frustration	Expressing frustration
Give up	Giving up
Challenge	Challenging the partner
CONSTRUCTIVE	
Humor	Using humor
Praise	Praising
Courtesy	Showing courtesy
Support	Supporting the partner's attempt to resolve a particular obstacle
Accept	Accepting action taken by the partner

The second category comprises strategic behaviors of students accessing either mediational artifacts or other people in their attempts to negotiate the online reading tasks (see Table 23). These strategic behaviors are contextual in that they grow out of the specific context of the task and the classroom environment. Even though not a central component of the WebQuest, students used a little pocket dictionary. At other times, students relied on the teacher or other students to assist them with a linguistic or procedural obstacle. Furthermore, this category also includes relying on images presented

in the worksheet or on the Web (visual), instances of using the worksheet or the Website (Check Web) to verify their understanding or answering operations, as well as using the computer to progress in the task (Comptool), for instance copying and pasting lexical items.

Table 23. Contextual Strategic Behaviors

Code	Description
ORD	Using outside resource – dictionary
ORT	Using outside resource – teacher
ORS	Using outside resource – students
Visual	Using visual clues such as pictures
Worksheet	Using the worksheet as a resource (checking spelling or gender of a word)
Check Web	Testing hypothesis/suggestions by looking at words on the Web
Comptool	Using the computer to facilitate task completion (copying and pasting text)

Socio-Procedural strategic behaviors relate to how students organize the collaborative task process (see Table 24). Students enlist cooperation or help (EnCo), establish “rules of the game” (NegCo), assign specific tasks (for example, looking a word up in the dictionary) to their partner or themselves in order to manage the task process and the nature of the collaboration. Other behaviors that fall into this category are loosely related to “being on the same page” and include checking with the partner (CP) regarding an answer or a process, speeding up or slowing down the progression (pace), restating an understanding of the task, and more generally establishing a shared reference (ESRA, ESR). Expressing uncertainty (Uncertain) or the inability to provide assistance (DK), as well as signaling that closure has been reached regarding a particular linguistic or procedural problem, or skipping an element, also frame the socio-procedural

environment. Finally, the task focus, be it spelling (spell), identifying the grammatical gender of nouns (Gender), producing the umlauts on the computer (Umlaut), editing answers (Edit), and being concerned with task mechanics round out this category.

Table 24. Socio-Procedural Strategic Behaviors

Code	Description
EnCo	Enlisting cooperation or help
NegCo	Negotiating cooperation
TaskAssign	Assigning task either to the partner or to oneself
CP	Checking with partner
ESRA	Attempting to Establish a Shared Reference
ESR	Establishing a Shared Reference
Pace	Moderating pace
Restate	Restating the task or the conclusion that they have reached
Uncertain	Expressing uncertainty about the task, a word meaning, etc.
Closure	Signaling in an explicit fashion that the specific linguistic problem has been exhausted
DK	Being unable to provide answer/help
Skip	Moving on without finding the answer
Spell	Being concerned with spelling
Gender	Identifying the appropriate gender of a noun
Edit	Editing answers
Umlaut	Entering the Umlaut
Task	Focusing on the mechanics of the task

The largest number of codes was identified as falling into the category of cognitive strategic behaviors. Transcending mainstream cognitive research, however, cognition is viewed as distributed. Within SCT, higher cognitive functions such as learning are integrally linked to the concepts of internalization and regulation. Students in this study were either object, other, or self regulated in negotiating the linguistic problem-solving tasks presented via the WebQuest. Mediational tools and strategic behaviors are employed in mediating one's own, the partner's, and collective regulation of the task.

Since the coded data represent Language Related Episodes, as explained previously, and since students were attempting to solve significant L2 linguistic obstacles, these cognitive strategic behaviors are viewed as regulating not only the task but more specifically L2 tool use.

Strategic behaviors classified as mediating one's own regulation are utterances that were primarily directed at the speaker him or herself. If students had worked individually rather than with a partner, they probably would have worked in silence rather than externalizing these strategic behaviors. However, since students were working in dyads, all actions and utterances were available for consideration by the partner. Nonetheless, certain utterances appeared to be more of an externalization of intramental rather than intermental dialog. It should be reiterated here that internalized cognitive processes always originate on the social plane and thus maintain their social origin even when they have gone "underground" and are performed by an individual. Instantiations of strategic behaviors that primarily mediate the student's own regulation are rereading an answer either in German (RRA) or translating it into English (RRA(E)). While answering, students also frequently accompanied their drafting with verbal utterances paralleling what they were typing, which was labeled as oral drafting (OD). Three types of prompts were identified: Aural Prompts (AurPro) served as an attempt to jog one's memory by pronouncing a word to discover its meaning or to test different options. Cognitive Prompts (CogPro) are defined by students harkening back to academic knowledge provided either during class or in the textbook. Visual prompts (VisPro) such as pointing with the cursor while reading, certainly assist the reader in maintaining visual focus on the screen, but could also be employed to indicate to the partner the textual

elements being read. Translating German text immediately into spoken English (TransGE) also can be seen as mediating both the self and the partner. However, the primary focus seems to be a verbalization of the student's internal dialogic engagement with the self. The code Private Speech (PS) is used to identify utterances that were most centrally directed at the self. They tended to be spoken more softly and were often paralinguistic in nature or elliptical phrases.

Table 25. Cognitive Strategic Behaviors

Code	Description
MEDIATING OWN REGULATION OF L2 TOOLS USE	
RRA	Rereading answer
RRA(E)	Rereading a German answer in English
OD	Oral drafting and editing
Pro	Focusing on pronouncing words
CogPro	Providing cognitive prompt
AurPro	Providing aural prompt
VisPro	Providing visual Prompt
PS	Engaging in Private speech
TransGE	Translating text GE “simultaneously” without being asked
MEDIATING PARTNER'S REGULATION OF L2 TOOLS USE	
ILK	Drawing on Interlanguage knowledge
Example	Providing an example to explain ILK
Explain	Verbalizing strategy – explaining ILK
Model	Modeling (pronunciation)
MEDIATING COLLECTIVE REGULATION OF L2 TOOLS USE	
Sug	Making a suggestion
Sug(E)	Making a suggestion in English
SugModS	Modifying one's own suggestion
SugModO	Modifying the partner's suggestion
SugAcc	Accepting suggestion
SugRej	Rejecting suggestion
SugQuestS	Questioning one's own suggestion
SugQuest	Questioning the partner's suggestion
SugAss	Asserting a suggestion
TAEG	Asking for translation from E to German

Table continued on next page

Table 25 (Continued)

TAGE	Asking for translation from German to English
TPGES	Providing a translation from German to English for own request
TPEGS	Providing a translation from English to German for own request
TPEGO	Providing a translation from English to German for the partner
TPGEO	Providing a translation from German to English for the partner
Tacc	Accepting a translation
Tquest	Questioning a translation provided by the partner
TquestS	Questioning one's own translation
Tass	Asserting translation
TmodO	Modifying a translation provided by the partner
TmodS	Modifying one's own translation
TrejS	Rejecting one's own translation
Trej	Rejecting the partner's translation
Context	Reading the context
Decode	Decoding
Evalinfo	Evaluating information
Hypo	Hypothesizing
Scan	Scanning within a page/screen
Scan site	Scanning across the screen boundary (clicking on the links)

The distinction between strategic behaviors mediating the partner's regulation and those mediating collective regulation lies in their role distribution. Instances in which one student was not merely providing a suggestion, translation, or evaluation, but was engaging in a more overt expert role were seen as attempts of that student to give the partner the strategies for use in future situations. Verbalizing interlanguage knowledge such as citing grammar rules (ILK), explaining words (Explain), and providing linguistic examples (Example), as well as modeling of pronunciation are instantiations of mediating the partner's regulation rather than being engaged in collective mediation of the task.

Strategic behaviors classified as mediating collective regulation are those that indicate what Donato (1998) called collective scaffolding: both students mediate each other's regulation through suggestions, translations, and modifications, acceptance, questioning, etc. The majority of codes in this category were related to either suggestions

or translations. Suggestions were directed at the partner and represent an attempt to exert control over his or her actions. Generally, suggestions related to either the task process or answering the questions and were put forth by the student who was not in control of the computer. Suggestions were made either in German (Sug) or English (SugE). Sometimes they were immediately accepted (SugAcc) or rejected (SugRej), but also led to questioning (SugQuest), modification by the same person (SugModS) or the partner (SugModP), which sometimes led to assertion (SugAss). In other words, both students in the dyad engaged in the process of determining whether or not a suggestion was ultimately put into use. Asking for and providing translations were also expressions of dyads engaged in collective problem solving. How students interacted with each other in the process of evaluating translations was labeled in the same manner as suggestions. It should be pointed out that the process of negotiating suggestions was not necessarily through utterances, but often through writing or neglecting to write.

Other codes in this category related to solving the problem of an unknown word by hypothesizing (Hypo), reading the context (Context), or decoding (Decode) it. Evaluating the information (Evalinfo) generally occurred while reading the Internet, as did scanning within the page (Scan) and scanning beyond the screen boundary by following links (Scan site)

Repetition and overlap were frequently identified in all transcripts by all dyads, and were combined in a category labeled other (see Table 26). However, these were generally added as a secondary code, which acted more as a descriptive rather than an interpretational tool. The same data were also coded with one of the codes falling into one of the primary categories described above. Villamil and DeGuerro (1998)

investigated repetition and Johnstone (1994) has published a book about this phenomenon. The research questions that guided this investigation did not allow for a full discussion of repetition, but they are flagged here for future investigations of these data. Overlap has been studied in conversation analysis in the context of turn taking and will also not be discussed in more detail here. However, these data were included here to illuminate the overall patterns in dialogic engagement exhibited by student dyads.

Table 26. Other Strategic Behaviors

Code	Description
RepS	Repeating oneself
RepO	Repeating the partner
OLS	Overlapping partner's utterance with identical or paraphrased utterance
OLD	Overlapping partner's utterance with different utterance

The following section deals with patterns of strategic behavior identified in the Language Related Episodes identified within the 18 transcripts collected during the WebQuests.

Overview of Strategic Behaviors

After discussing strategic behaviors globally, taking all dyads and all tasks together, differences and similarities between operation types (comprehending, searching, and answering) will be highlighted. Selected episodes will be explained in their entirety to illustrate how strategic behaviors and mediational tool use create overall patterns of

dialogic engagement. Patterns relating to change over time are the focus of Question 3 and will thus be reserved for that section.

Grouped by category, Table 27 presents the frequency of strategic behaviors overall (in all 91 episodes) and by dyad. The use of numbers in this section warrants a short discussion. First, codes were assigned to chunks of transcribed data representing either verbal utterances, on-screen actions, or a combination thereof. The length of coding was not normed and thus included such varied elements as paralinguistic utterances, pointing with the cursor, typing textual elements, and utterances of letters, words, and phrases. Secondly, double coding was allowed for any chunk of data as described above. Thirdly, because different numbers and types of Language Related Episodes were identified for the six dyads, no true baseline number exists for drawing comparisons previously. Percentages are used, but need to be understood within the parameters described. Consequently, the numerical representations of the data were provided as a starting point for discussing them in context. In addition, counting occurrences of specific strategic behaviors was not conducted in an attempt to perform inferential statistics, but rather to identify emerging themes and trends.

The dyads varied considerably in the overall number of strategic behaviors. These frequencies are related to the number of LREs. A low number of episodes almost necessarily led to a low number of strategic behaviors, since only LREs were coded. Of all dyads, R/C engaged in the fewest number of episodes (7) and only exhibited 209 strategic behaviors. With 26 LREs and 958 strategic behaviors, C/D is at the opposite end of this scale. The comparative length of LREs also had an impact, which is evident in comparing R/T's 530 strategic behaviors in 15 LREs and 343 strategic behaviors in 14

Table 27. Overview of Strategic Behaviors by Dyad and Category

Categories	DYAD					
	B/F	R/C	C/D	L/J	M/J	R/T
Affective						
Destructive	40 (6.3)	8 (3.8)	31 (3.2)	6 (1.7)	3 (.7)	35 (6.6)
Constructive	13 (2.1)	10 (4.8)	30 (3.1)	8 (2.3)	13 (3.3)	10 (1.9)
Contextual	26 (4.1)	7 (3.3)	28 (2.9)	16 (4.7)	29 (7.3)	18 (3.4)
Socio-Procedural	159 (25.2)	64 (30.6)	206 (21.5)	48 (14)	104 (26.3)	134 (25.3)
Cognitive						
Mediating partner's						
regulation of L2 tool use	23 (3.6)	6 (2.9)	29 (3.0)	4 (1.2)	12 (3)	41 (7.7)
Mediating own regulation of L2 tool use	151 (23.9)	59 (28.2)	244 (25.5)	75 (21.9)	100 (25.3)	86 (16.2)
Mediating collective regulation of L2 tool use	164 (26.0)	49 (23.4)	316 (33.0)	155 (45.2)	123 (31.1)	189 (35.7)
Other	55 (8.7)	6 (2.9)	74 (7.7)	31 (9.0)	12 (3)	24 (4.5)
Total	631	209	958	343	396	530

Note. Number of episodes by dyad: F/B=17; R/C=7; D/C=26; L/J=14; M/J=12; R/T=15
Numbers in parentheses represent percentages

LREs. R and T tended to have longer episodes because they had to expend comparatively more energy on establishing a shared understanding of the problem, frequently employed more explicit explanations, and seemed to struggle with negotiating the terms of their collaboration.

Overall, the largest amount of strategic behaviors (989) fell into the category of mediating collective regulation, which is not surprising given that collaborative dialog is one of the defining characteristics of Language Related Episodes. A striking imbalance exists between the number of strategic behaviors regulating one's own (715) and the partner's (115) regulation. When they were not solving the problem collectively, students focused their strategic behaviors towards themselves, rather than trying to influence the partner's cognitive processes. For all dyads, regardless of their L2 proficiency composition, self-directed strategic behaviors by far outnumbered those directed at regulating the partner's regulation of L2 tool use. For L and J, the frequency of mediating own regulation was almost 19 times higher than mediating the partner's regulation, while the ratio for most dyads was between 6.6:1 (B/F) and 9.8:1 (R/C). R and T, on the other hand, not only had the highest number of instances of trying to mediate the partner's regulation (41) but also the lowest ratio (2.1 :1).

Socio-Procedural strategic behaviors, those relating to managing the task and the collaboration, tended to account for roughly a quarter of the overall numbers. J and L had the lowest occurrence overall (48 out of 343; 14%) and R and C had the highest frequency (64 out of 209; 31%).

While the total number of affective strategic behaviors is comparatively low, accounting for only 207 out of 3067 coded instances (6.7%), the ratio between

destructive and constructive strategic behaviors speaks to the overall types of dialogic engagement prevalent within the various dyads. Two dyads, B/F and R/T, exhibited approximately three times as many destructive as constructive behaviors (40:13 and 35:10, respectively), while in the case for M and J, constructive behaviors outweighed destructive ones 13:3. For the remaining dyads, behaviors coded as either constructive or destructive were relatively balanced.

While these results reported on overall patterns of strategic behaviors, dyad specific patterns of dialogic engagement will be discussed in Question 3. Instead, the next section will compare and contrast types of strategic behaviors by the types of operations during which they occurred.

Strategic Behaviors by Operation Type

As discussed previously, before selecting Language Related Episodes, all the transcripts were coded according to operation type. Within Activity Theory, operations are the specific behaviors through which goals are achieved. Even though each WebQuest had a number of components students needed to complete (see Tables 8, 9, and 10 in chapter III), ultimately these steps fell into three operations: comprehending the worksheet (comprehending), searching the Web (searching), and answering questions (answering). Table 28 provides an overview of strategic behaviors grouped by operation type and category. Looking at percentages is helpful in this instance because of the uneven distribution of episodes into operation types. As discussed previously, 39 episodes were selected from comprehension, 42 from answering, and 10 from searching operations.

Table 28. Strategic Behavior by Operation Type

Categories	Operations						Total	
	Comprehending		Searching		Answering			
Affective								
Destructive	42	(3.4)	11	(3.2)	70	(4.7)	123	(4.0)
Constructive	36	(2.9)	8	(2.3)	40	(2.7)	84	(2.7)
Contextual	61	(4.9)	20	(5.7)	43	(2.9)	124	(4.0)
Socio-Procedural	305	(24.6)	49	(14.0)	361	(24.4)	715	(23.3)
Cognitive								
Mediating partner's regulation of L2 tool use	18	(1.4)	18	(5.2)	79	(5.3)	115	(3.7)
Mediating own regulation of L2 tool use	303	(24.5)	86	(24.7)	326	(22.0)	715	(23.3)
Mediating collective regulation of L2 tool use	390	(31.5)	125	(35.9)	474	(32.0)	989	(32.2)
Other	83	(6.7)	31	(8.9)	88	(5.9)	202	(6.6)
Total	1238		348		1481		3067	

Note. Percentages are provided in parentheses and rounded to one decimal point.
Number of episodes by operation: Comprehending=39; Searching=10; Answering=42

Destructive behaviors were more frequent in answering. This difference is accounted for primarily through instances of ignoring the partner (50 in answering as compared to 29 in comprehending). Impatience was also more prevalent, representing 13 out of 15 instances in answering. The occurrence of constructive behaviors does not seem affected by operation type.

Comprehending and searching are more similar in the use of contextual strategic behavior, while answering produced fewer behaviors in this category. Visual information was the single most used strategy in searching the Web. By design, Websites utilized in the WebQuests provided substantial visual support. The dictionary was used heavily in both comprehending and answering, while the worksheet was used more during

answering, and the computer was used more frequently during comprehending. These results seem to indicate that students primarily relied on each other and their collective knowledge rather than on contextual resources.

The numbers of strategic behaviors mediating a student's own or the dyad's collective regulation of L2 use were rather consistent across operation type, but comprehending produced a lower number of strategic behaviors targeted at mediating the partner's regulation. While the frequencies compute to 5.2% for search and 5.3% for answering, only 1.4% of all strategies coded for comprehension were of this category. For all apparent similarities between searching and answering in this category, the detailed distribution (see Appendix J) also points to differences. Naturally, answering produced more instances of rereading the answer (RRA) 3.8% and oral drafting (OD) 5.1%, which are less than one percent for both comprehending and searching. Cognitive prompts were also slightly more frequent in answering by 1.7% compared to .7% in comprehending and 1.1% in searching. On the other hand, aural and cognitive prompting occurred more frequently in comprehending (11.3%; 3.4%) and searching (10%, 3.7%) than in answering (6.5%; .6%). Immediate translation of German text into English speech occurred 67 times (5.4%) in comprehending, but only six times (1.7%) in searching and three times (.2%) in answering.

The distribution of the specific strategic behaviors in the collective regulation category also differs by operation type (see Appendix J). These differences seem to originate in the nature of the operation. Suggestions were generally advanced in regards to answering, but searching the Web for information also produced a relatively larger number of suggestions and variants thereof than during comprehending. Even though

translating also played an important part in answering, their frequency is higher in comprehending, especially when it comes to questioning, modifying, and asserting them. Naturally reading the context of a word and decoding it were also observed more frequently in comprehending operations, while evaluating the information, scanning, and scanning beyond the screen boundary occurred more often while searching the Web. Hypotheses were put forth and tested primarily when comprehending.

Even though the discussion of coding tallies has been useful in identifying trends, the way to truly understanding strategic behavior is through taking a closer look at selected episodes.

Excerpt 28. T1_F/B

629: F: **und sehr jühl**, how do we say **jühl**, we did this yesterday
 630: B: **schwül**
 631: B: | s c h (English)
 632: F: Are you sure?
 633: B: Uhum
 634: F: Hold on
 635: **Und**
 636: **Mwt worksheet**
 637: B: | **schwül**
 638: F: **sehr** **schw** ... s no that's an adjective. S c h
 639: **Tp zehr;** **tp S; dl S; tp sch**
 640: B: Umm, umlaut u
 641: **Tp w**
 642: F: Is it w umlaut u?
 643: B: **Schwül**
 644: F: **schwül**
 645: F: ok umlaut u it's 0 2- 52 oh, alright... **schwül**, like this?
 646: **Tp ü**
 647: B: **schwül**
 648: F: h any h?
 649: B I think there's an e after that
 650: F: Look in there, there is an **ü**
 651: **Paged turning**
 652: B: s c- h w u l that's it, yeah
 653: F: That's it?
 654: B: Yeah
 655: F: OK

656: und sehr schwül 67%

What else?

657: Tp 67%

|
|

720: F: no, you need is... you need it firscht firscht... it's not what you said...

721: B: No it is, I'm quite sure of it. If it's this as well, it's also...

722: F: really?

723: B: She taught us that yesterday schwül: humid

724: See, she said schwul schwül is humid schwul | is gay

725: Dl ok

726: F: ist schön. That's right

727: Tp sch

728: B: Remember she said that yesterday?

729: F: Ahh, zero deux quarante six (French) is schön. Is that good enough?

730: Tp ö n

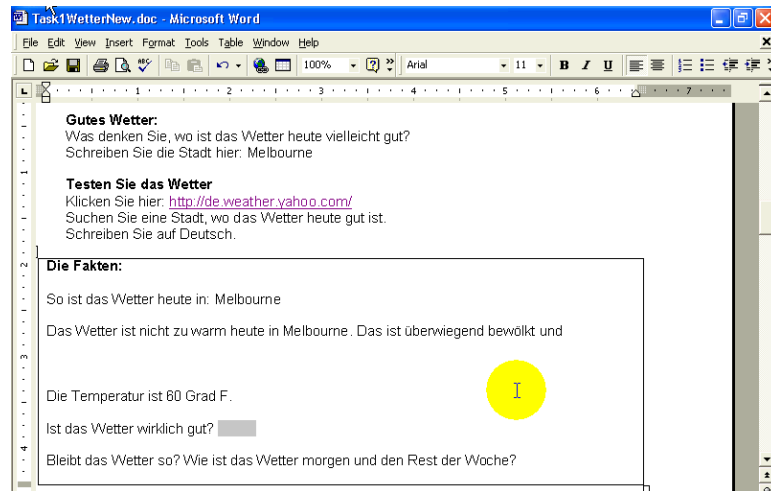
731: B: Schön

Figure 37. T1_F/B (28:16)



Note. Line 629

Figure 38. T1_F/B (28:26)



Note. Line 637

In Excerpt 28, F and B were entering the weather information for Melbourne on the worksheet. In this dyad, F controlled the mouse during all three tasks. In line 629, F was trying out a phrase she wanted to compose by saying it in German, but she was unsure of a word. She uttered *jühl* but was aware that it was not quite correct and consequently enlisted her partner's cooperation. In an attempt to prompt her own memory (CogPro) and probably also that of her partner, she stated "We did this yesterday." B provided the correct lexical item (line 630) and started to spell it when F interrupted him by questioning his suggestion (line 632). He asserted his suggestion, and F progressed with her drafting process. B repeated his suggestion again while F engaged in oral drafting (line 638). She initially wrote *schwül* with a capital letter, but corrected herself immediately by mediating her own cognitive process through verbalizing a German capitalization rule. However, a partial statement of the rule sufficed. By merely stating that the word is an adjective, she also implied that it was not capitalized. She spelled the first three letters of the word and paused for a short time, seemingly trying to access the

spelling of the remainder of the word. As she entered the letter w, B supported her efforts by suggesting the next letter ü. Again, F asked for confirmation and pronounced the word (line 644) to deduce its spelling before proceeding with entering the umlaut, which she accomplished successfully by verbalizing the numbers that are necessary to produce the character. F engaged in several strategic behaviors that were intended to regulate her own mediation of writing in the L2, while B took on the role of supporting her efforts.

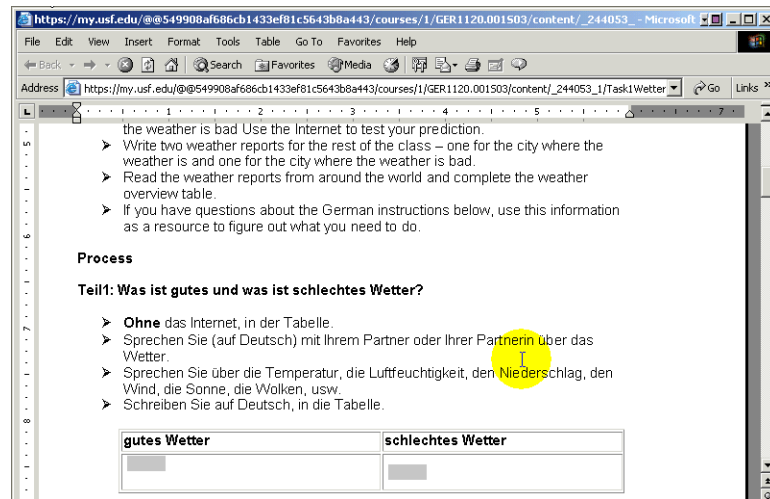
After finishing the word, she did check with her partner to verify the spelling. It is not clear from the data if she was uncertain of the spelling at that time, but it appears that she was not entirely convinced, as she kept inquiring about it. They finally reached closure in lines 653 through 655. However, the word became an issue of discussion again. In line 720, she questioned B's suggestion again, but he repeatedly asserted his knowledge. He referred back to the previous class session, during which the word had been discussed. He prompted his own memory by repeating the minimal pair (*schwül*=muggy; *schwul*=gay) pointed out by the teacher (line 724). This example probably was particularly salient to this student as he was himself homosexual. However, F ignored his explanation and moved on to the next sentence despite his repeated attempt to convince her (lines 724 and 728). Ultimately, B accepted F's control over the pace and the task.

Excerpt 29. T1_D/C

- 96: D: This part I won't understand...
97: Sc very slowly-----
98: Was ist | gutes
99: Screen display: Task in center of screen
100: C: (???)
101: D: Und was ist schlechtes Wetter.
102: C: In der tabel?
103: D: What is good | and what is bad weather?

104: C: What is a **tabel**?
 105: D: **tabel**? ... I don't know.
 106: On the Internet, | in the ... in the... **tabel**... hmmm
 107: **Sprechen Sie**... what does that mean?
 108: **M cursor over the word Sprechen**
 109: C: That's a good question... ahh... speak... ahh... speak **in deutsch** with your partner or your... oh, your male or female partner...(laughs)
 110: **Cursor moves along the line that is being translated-----**
 111: ahhh...over the ... about the weather.
 112: D: Let's see, about | the temperature...
 113: C: speak about about the temperature ... **die**
 114: D: ahm whatever that is...
 115: **Cursor underneath "Luftfeuchtigkeit"**
 116: C: **feuckt**...
 117: D: (laughs)... | ahh... whatever that is....
 118: C: **feuchtigkeit**
 119: **Cursor underneath "Niederschlag"**
 120: C: **der Niederschlag**... and | **der Wind, die Sonne**
 121: D: the wind the sun clou... cloudy...| clouds u-s-w
 122: **C under wind Sonne - Wolken**
 123: C: clouds | u-s-w?
 124: D: **Schrieben Sie in**... German ... **in tabel**...ok
 125: **Cursor moves underneath line of German text**
 126: C: hmmm, I think it's notebook.
 127: Ohh, maybe it is here.
 128: **Sc quickly -----**
 129: D: So we're filling in this...weather...
 130: **-----**
 131: C: Stuff, yeah
 132: **conclusion ; sc back up**
 133: C: Yeah.
 134: **Sc back to table**
 135: D: I wonder if we could print it and write it in... but anyway...Ok...
 136: Screen display: Teil 1 heading is at top of page
 137: **Cursor moves in circles over page and finally ends on entry field under gutes Wetter**
 138: Good weather...
 139: I guess we put.... The place where we think it's ... we want to look.
 140: **Cursor moves around ; Sc back to introduction -----**
 141: C: I think we want, we're supposed to say what we think is good and bad weather...
 142: **-----**
 143: D: ohh

Figure 39. T1_D/C (4:50)



Note. Line 109

D and C had just finished reading the introduction and task, which were both written in English. It should be noted that D was in control of the mouse during this episode. When starting to read the German text, D recruited collaboration and help from her partner by stating: “This part I won’t understand...” While slowly scrolling down, she then read the first line of text (lines 98 + 101) in German (L2R). By reading the text in German rather than translating or restating it in English, D signaled that she did not have a full understanding of the text. While D was reading the text, C seemed to have read further ahead and had come across an unknown word (*Tabelle*). He, in turn, recruited D’s attention by reading the German phrase with a rising question intonation. Meanwhile, D provided a translation of the text she previously read in German (line 103). Having been ignored in his initial attempt to enlist cooperation, C interrupted D’s translation with the more direct question: “What is a tabel (G)?” (line 104). With this utterance, in which he inserted the unknown German word into an English sentence, he succeeded in focusing his partner’s attention on his question. After finishing her own translation, D signaled her

willingness to engage in finding a solution for C's obstacle by offering a translation, which she framed as a hypothesis. She then attempted to deduce the meaning by translating the context (line 106) before coming across another unknown word (*sprechen*). Again, she enlisted help by reading the word in German, signaling that she could not provide a translation. She supported this appeal by using the cursor as a pointing device indicating the problematic lexical item. Even though initially unsure, C was able to provide the correct translation (speak) by using the context clue *auf Deutsch* (in German) (line 109). Both partners were engaging with the same piece of text at this time, which is evidenced by the cursor, controlled by D, moving over the line as it is being read by C. It seems important to point out that the table itself was not displayed on the students' screen at this time.

In lines 112 through 123, the students continued reading the German task instructions, translating items they comprehended and reading and/or pointing to German words incomprehensible to them. They also recognized the words that were covered during the preceding class periods, such as wind, sun, clouds, temperature, which C initially read in German, while D provided their translation equivalent immediately (lines 120 to 123).

In line 124, D read the final line of the instructions, which reiterated the original unknown word (*die Tabelle*). Staying true to the established pattern, "in German" was the only phrase translated as it seemed the only part of the sentence with which she felt comfortable. Finally, C ventured a hypothesis in line 126. The assumption that they were expected to write in their notebook was undoubtedly based on his knowledge of the activity of schooling and that writing tasks are normally carried out with a pen on paper.

However, as D scrolled down, the table came into view, and C realized that his hypothesis was not correct. Suddenly, the task seemed clear to both students, and they were no longer concerned about the words they did not understand. Rather, D restated the task in an attempt to establish a shared frame of reference. C agreed with his partner in lines 131 and 133, as D scrolled through the entire task and returned to the table in line 134. The computer became a topic of discussion as D expressed her preference for the pen and paper technique, but yielded to the teacher's decision to require the electronic form. She signaled her readiness to continue with the task by clicking inside the entry box for good weather (line 137) and by translating the title (line 138). This was probably directed at her partner to recruit his collaboration. This intention is expressed more clearly when she restated her understanding of what was expected of them. She utilized the English instructions provided on the worksheet as a guide by scrolling back up to the introduction for a quick glance. C stated the correct interpretation in line 141, which D accepted immediately.

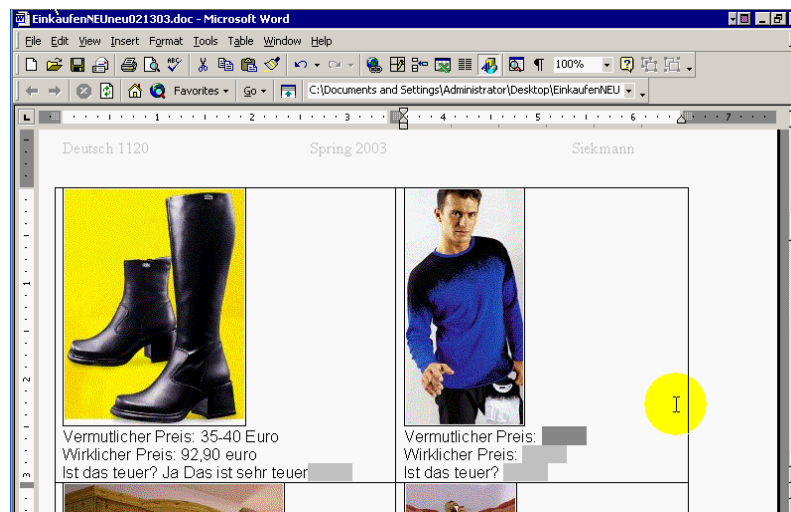
While the students in Excerpts 28 and 29 employed English as their primary mediational tool, using German mainly to draw attention to unknown words, offer suggestions, and enlist cooperation and help, Excerpt 30 shows a different type of L2 use. L and J engaged in negotiating their bid for the sweater. While J expressed his thought process in English, L made a suggestion in German (line 283). Softly, J modified her suggestion by using English, which prompted L to restate his guess in German. Her attempt at mediating her partner's regulation over German was successful as J repeated the German number. L repeated the price, focusing his attention on the pronunciation. Again, J, repeated the German word before switching to English to ask for his partner's

approval, which she provided with a simple “Yeah”.

Excerpt 30. T2_L/J

279: J: OK
280: ahm... | I'm gonna go with...
281: L: Ahmmm
282: J: I'm worried now. I would would guess like 30 dollars, but if it is made out of like Mink...
283: L: **Dreizig Euro?**
284: J: (whispers) maybe 50
285: L: **Fünfzig**
286: J: **Fünfzig**
287: L: **Fünfzig** Euro
288: J: **Fünfzig** is that a good guess?
289: L: Yeah
290: ...
291: **tp 50 euro**
292: J: OK

Figure 40. T2_L/J (21:20)



Note. Line 279

Excerpt 31 illustrates the use of German as a true psychological tool in the process of understanding the word *Wohin* (where to), which was used in one of the questions in Task 3. While looking on the Web, C initiated the LRE by enlisting D's cooperation and help in comprehending the worksheet as a direct question phrased in

English (line 314). Since this dyad tended to change computer control periodically, it cannot be determined conclusively from the transcript which student navigated back to the worksheet in line 315. After having read the entire question aloud, he repeated the word *wohin* indicating that he was not able to translate it and in an attempt to enlist his partner's cooperation. He then repeated the word again in line 319 in a pensive manner, which probably served as an aural prompt activating his own L2 knowledge. He then proceeded to engage in a componential analysis of the word. Drawing on the word's form and sound, he identified the connection to *wo*, which means "where." D ignored his attempts to gain her attention and was herself pondering the unknown word *entscheiden* (to decide). Not only did she read the word aloud (line 321), but she also used the cursor to point to it (line 322) in her own attempt to discover the meaning through reading context rather than decoding it. This pattern continued in lines 323 through 332. C kept verbalizing familiar words which had been utilized in class containing *wo*, in an attempt to prompt his memory through the sounds of these words. D, on the other hand, persisted in reading the German text surrounding the word in order to glean clues from the context. After a significant pause in both verbal interaction and on-screen actions, a transition in strategic behavior was signaled by C's "Okay" (line 335), which was echoed by D in the next line. D then proceeded to form a complete German sentence based on the keywords provided on the worksheet. The text displayed on the screen "Wangerooge (*Deutschland*)" was produced as *Wangerooge ist in Deutschland* (Wangerooge is in Germany). Unable to add to this statement, or involved in intramental dialog, C simply provided a backchannel cue. D again produced sentence fragments as sentences, probably as a means of controlling her rising frustration level, and finally reread the question (line

340). After another period of silence, C finally decided to go with his original translation. In order to work towards task completion, he seemed willing to accept some ambiguity (*wo* basically means “where”). D accepted his translation and both students simultaneously took a stab at providing a translation. At this point, the problem had been brought to closure, and D moved the cursor down to answer the question.

Excerpt 31. T3_D/C

314: C: What’s... What’s this part of the assignment exactly? What are we supposed to record?...

315: Mwt worksheet

316: 12:22

317: Wohin mochten Sie fahren... Wohin...

318: Cr over Teil 2 instructions paragraph

319: Wohin...

320: Some form of | where is *wohin*, but

321: D: *entscheiden*

322: Cr over *Entscheiden Sie*

323: C: I don’t know what form of where...

324: Wo...

325: ...

326: Wohnung,...

327: Wo, Woher...

328: D: I don’t know what’s *dann sammeln*

329: Cr over *dann sammeln*

330: Wohin

331: D: Information about the city

332: Cr follow along

333: ...

334: ...

335: C: Okay...

336: D: Okay... *Wangerooe ist in Deutschland*

337: C: Mhmm

338: D: *Wien... Wein, Wien ist in Osterreich,*

339: *Osterreich... Interlaken ist in Schweiz...*

340: *Wohin mochten Sie fahren*

341: ...

342: C: Well, it’s some form of where, so it basically means where here. | Where is the city

343: D: Where is the city?...

344: ...

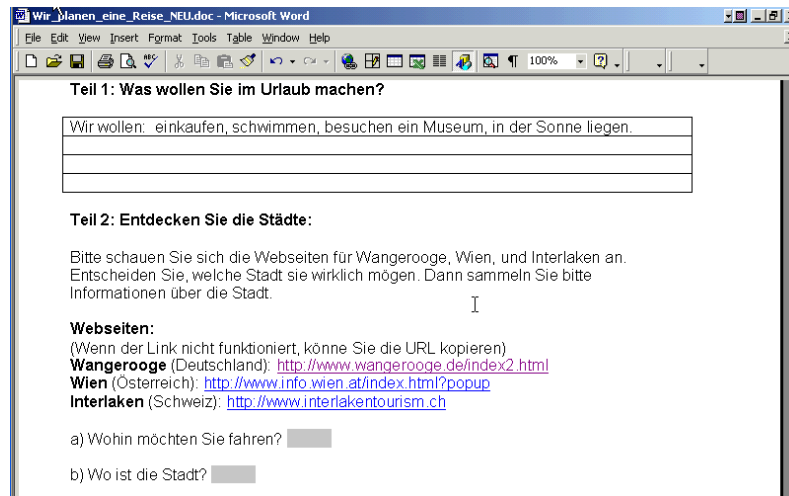
345: ak dn to a)

Figure 41. T3_DC (12:21)



Note. Line 314

Figure 42. T3_D/C (12:25)



Note. Line 317

Strategic Behaviors and Psychological Tool Use

In this section I will very briefly describe how strategic behaviors relate to psychological tool use. The L1 was used by all students in all categories. Since students participating in this study had a well-formed L1 system in place, it is only natural that they used their native language as their primary mediational tool, especially when they

were interacting with each other.

Because of the nature of the tasks, all dyads necessarily employed the L2 at some point during the task. However, the L2 in its various instantiations was used only for certain strategic behaviors. While all students relied on aural prompts in German to “jog their memory,” to indirectly enlist their partner’s cooperation, and help or to test words and phrases in oral drafting, other strategies were carried out in German only rarely and only by a certain students (see overview in Appendix K). There seems to be a gradation in the types of strategic behaviors students are able or willing to negotiate in German.

Some students employed German for rather discreet phrases and questions that had been modeled extensively by the teacher during class. For example, *Ja* was used to accept translations and suggestions and to provide closure. In addition to being suggested as the answer to some of the questions posed on the worksheet, *Nein* was also used to reject or modify suggestions and translations. Requests for translation by using the phrase *Was ist ...* (What is...) were also identified in the transcripts, as was the use of German *gut* (good) to praise the partner.

In addition, numbers seemed to provide an impetus for using German. During Task 2, students were asked to guess and find prices, and to convert currency. These task components led to students negotiating guesses as described in Excerpt 30. Several students also worked on stating complicated numbers, such as those located on the shopping site in German. The use of L2 as a mediational tool in regards to numbers can be illustrated most clearly with this example (Excerpt 32) of F trying to say “500” in German. Rather than searching for a translation directly from English (or French, her

native language), she counted from one to five in German to make sure she used the correct word.

Excerpt 32. T2_B/F

664: F: Ah five hundred. Fi ah... eins, zwei, drei, vier fünfhundert
665: Tp 500,00;

The Role of the Teacher

In 91 episodes, the teacher's help was enlisted 18 times. This is probably related to the operational definition of LREs. If students did not engage in collaborative problem solving before asking the teacher, or if the teacher initiated interaction with the students as an intervention, these instances did not make it into the final set of episodes. The teacher's role was not a primary focus in this investigation, but each dyad sought out the teacher's assistance when they were unable to solve a linguistic problem by themselves. The frequencies provided in Table 29 have to be interpreted with the understanding that they only represent teacher involvement during Language Related Episodes. The relatively low numbers of instance in which students asked the teacher for help indicates that students initially tried to solve the problem with the help of their partner or the dictionary.

Table 29. Overview of Teacher Involvement in LREs by Dyad and Task

	Task 1	Task 2	Task 3	Total
B/F	1	2	0	3
R/C	0	1	1	2
C/D	2	0	1	3
L/J	2	0	0	2
M/J	4	0	1	5
R/T	1	2	0	3
Total	10	5	3	18

Research Question 3: Change Over Time

In order to answer this question, data from all data collection instruments were incorporated in order to gain insight into each dyad's dialogic engagement. First, a profile was created of each dyad based on information gathered via the Background Questionnaire and the Personal History Overview. Then, off-task actions, strategic behaviors, and task success were analyzed both overall and by dyad and task in order to identify change over time. Data collected via the Stimulated Recall Interviews were used to corroborate findings when applicable.

Even though students were not graded for linguistic accuracy, or how many questions they answered correctly, their success on each of the tasks was charted in terms of successful completion of the various task components. Dyads differed greatly in overall task completion (how much of the task completed) and in how successfully they completed individual elements.

Task 1

Table 30 provides an overview of overall task completion and successful completion of individual components for Task 1. For a description of the different elements, please refer either to the WebQuests in the Appendix D, E, and F or to Tables 11, 12, and 13 in chapter III. Of the six dyads, no dyad completed all elements of the WebQuest. However, four dyads completed the information gathering elements, but because of time constraints were not able to share their weather information with the rest of the class. Two dyads, RC and MJ reached the last part of the WebQuest, which involved posting their finding to the entire class via Blackboard. This “sharing” element was included in all three tasks, but since the vast majority of students did not reach this last component during the class period, the next class period was used to share their results orally with the class. In the case of Task 1, the day following the WebQuest was the day of the first exam, so the discussion was moved to the following Monday. Because of these circumstances, the final components were excluded from the data analysis.

The two dyads that progressed furthest in the task both “cut corners” for several components. M/J used an English site for two components and skipped two additional elements R/C also utilized an English site for two elements and asked another group for two additional components. On the other hand, D/C, who were able to complete only the two information gathering tasks, did not skip any elements. They did, however, incorrectly assume that the temperature was provided in Fahrenheit rather than Celsius and asked the teacher for help twice. B+F completed all elements correctly with only one instance of the teacher’s assistance. The remaining two dyads were both in the process of

Table 30. Overview of Task Completion for WebQuest 1 (Weather)

Task components	Dyads				
	F/B	R/C	D/C	L/J	M/J
Enter good and bad weather	✓	✓	✓	✓	✓
Understand that they need to predict	✓	(✓) other group	(✓) teacher	✓	✓
Good weather					
Testing predictions good	✓	(✓) English site	✓	✓	✓
Interpret weather information correctly	✓	(✓) use English site	✓	✓	(✓) English site
Temperature	✓	✓	-- confuse F +C	✓	(✓) English site; in Fahrenheit
<i>Wirklich</i>					
Weather forecast (<i>bleiben</i>)	✓ dictionary (✓) teacher	✓ (✓) other group	✓ dictionary ✓ confirm with teacher	✓ dictionary (✓) incomplete	✓ dictionary (✓) online translator + teacher
Bad weather					
Testing predictions bad	✓	✓	✓		✓
Interpret weather information correctly	✓	✓	✓		
Temperature	✓	✓	--		
<i>Wirklich</i>					
Weather forecast (<i>bleiben</i>)	✓ dictionary (✓)	✓	confuse F +C ✓		✓
Blackboard posting ^a					
Understand instructions		✓			✓
Post message		✓			✓
Complete summary table					

Note.

^a Elements excluded from data analysis

✓: successful completion of task element

✓ dictionary: successful completion of task element with dictionary

(✓): completion of task element only with the help of the teacher, other students, and English site. Or incomplete task element

--: element completed unsuccessfully

skip: task element skipped

gathering information about the weather forecast when class time expired, but there are differences in the successful completion of the individual elements. While J+L stepped through each component successfully, R/T needed two teacher interventions and misinterpreted two key components of the task. Rather than predicting a city for good weather and testing their prediction, they browsed the online weather information without a specific goal.

Task 2

Table 31 provides an overview of task completion and success on the various task components for Task 2. In this task, all six dyads completed guessing the prices, finding the items, and writing their opinions, and four pairings went on to post their findings and search for presents. While most student dyads ultimately understood the format of the invoked game show, found the required items on the Web site and stated their opinions about them in this particular task, the order in which students completed the various elements varied significantly. F/B and J/L are the exception as they chose to step through each component one by one. After unsuccessfully searching for the sweater, F/B skipped that element and was not able to return to it because of the time constraints. Two more dyads, D/C and M/J, completed the first set of elements (understanding the game and guessing prices). On the shopping Website they found the items in different orders because each group reacted differently to the various screen elements and consequently found certain items more quickly than others. R/C, who reached the end of this WebQuest, skipped the instructions and immediately started looking for an armoire that they would like to have. When returning to the worksheet to record their answer, they

went back to read the instructions. From that point on they progressed though the task step by step, and with the exception of finding the sweater were successful in all task components. The task progression of R/T, who were not able to progress past writing their opinions, is difficult to capture in any linear format. They talked at length about the term *Der Preis ist heiß* which literally translates to "The Price is Hot". However, *heiß* also looks like a form of *heißen* (to name, to be called), which was confusing to these students. As soon as they were ready to move on, this dyad also immediately jumped to the Website and started looking for any sweater, boots, etc. that they would like. Only later on, after they had already written their opinions, did they notice the table picturing the specific items. Once they had confirmed the task with the teacher, they very quickly located the specific items on the Website. It is interesting to point out that T completed the Web search by himself to a large part, while R was preparing for the upcoming oral exam. Only M/J had difficulty understanding the phrase "*Wie finden Sie*". They initially used the literal translation of "*finden*" (to find) and started describing the steps they took to find the items on the Web site. M later realized that the expression meant "how to you find" or "what do you think of." All students wrote complete sentences and most were successful in supplying the accusative articles for which this context presented an obligatory context.

Table 31. Overview of Task Completion for WebQuest 2 (Shopping)

Task components	Dyads					
	F/B	R/C	D/C	L/J	M/J	R/T
Understand “Price is Right”	✓	2✓	1✓	✓	1✓	1(✓) 3(✓) teacher 4(✓) skip and enter later 2(✓)teacher
Guessing prices	✓	3✓	2✓ pictures	✓ pictures	2✓	
<i>Vermutlich, wirklich</i>	✓	✓	3✓	✓	✓ dictionary	
Finding items						
Boots	✓	4✓	6✓	✓	3✓	7✓
Sweater	--skip	5--	5✓	✓	4 skip 7(✓)teacher	6(✓) teacher
Armoire	✓	1✓	4✓	✓	5✓	8✓
Watch	✓	6✓	7(✓) teacher	✓	6(✓) teacher	9✓
Understand <i>teuer</i> (Converting prices)	✓	✓	(✓) confusion	✓	✓	✓ 3(✓) 5(✓)
Writing opinions						
Understand <i>Wie finden Sie</i>	✓	✓	✓	✓	✓ delayed	(✓) different items
Writing complete sentences	✓	✓	✓	✓	✓	(✓) different items
Blackboard Posting ^a						
Post message	(✓) teacher	✓		✓	Missing link	
Summary table	-- guess					
Currency conversion		✓		✓	✓	
Understand table (<i>wer, wen</i>)	(✓) teacher	(✓) teacher		skip	✓	
Find presents	✓	(✓) teacher		✓	✓	

Note. Numbers indicate the order in which task elements were attempted if they differed from the order in which they were presented.
^a Elements excluded from data analysis
✓: successful completion of task element
✓ dictionary: successful completion of task element with dictionary
(✓): completion of task element only with the help of the teacher, other students, and English site. Or incomplete task element
-- : element completed unsuccessfully
skip: task element skipped

Task 3

Overall task completion and success on individual elements are visually displayed in Table 32. No dyad completed all elements of the task, and overall task completion different considerably by dyad. Two dyads, R/C and R/T, posted their findings to the Bulletin Board, but both of these pairing also skipped several of the specific questions about the destination they chose and invented information rather than finding it on the Website. Two additional dyads, F/B and M/J, answered all the specific questions about the destination they had chosen. F/B progressed through each of the components step by step and answered each of the questions in turn except for inventing information about the weather. When looking for specific activities, this dyad spent a significant amount of time investigating differences between the German, the French, and the English versions of the Websites when it came to providing information about a gay and lesbian festival taking place in Vienna that Spring. M/J also progressed through each of the components sequentially with only minor problems in the beginning. Initially M/J thought they were supposed to enter a travel destination right away, but then realized that they were asked to write what they would like to do on a vacation. Rather than exploring all three destinations, they were able to match a city with their preferred activity after looking at only two of the choices and proceeded to answer all specific questions. The remaining two dyads were not able to complete the specific questions about the destination of their choice. D/C successfully understood and answered all components they worked on, but rather than quickly matching up their preferred activities with one of the provided cities, they explored each destination in detail before reaching consensus about which to select.

Table 32. Overview of Task Completion for WebQuest 3 (Planning a Trip)

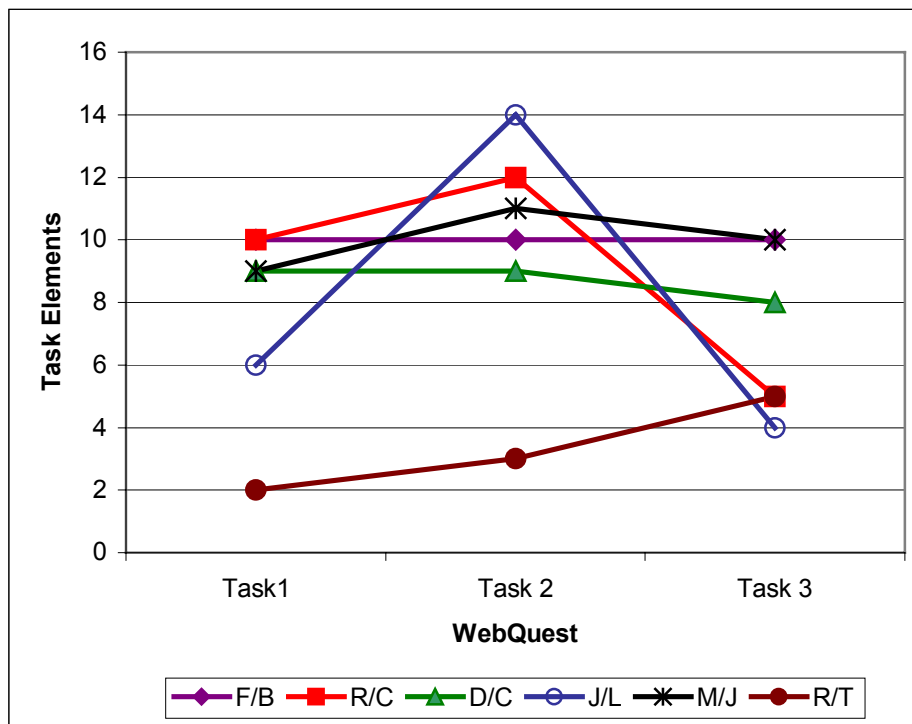
Task components	Dyads				
	F/B	R/C	D/C	L/J	R/T
Travel activities	✓	✓	✓	2✓	✓ delayed 1✓
Modal word order	(✓) Verbs only	✓	✓	3(✓) partial	(✓) teacher 2✓
Choosing city	✓	✓	✓	✓	3(✓) delayed + teacher
Understand that choices are cities	✓	✓	✓	✓	4(✓)
Explore quickly based on their desired travel activities	✓	(✓) 2 out of 3	✓ spend a lot of time on each	1 Wangerooze 4✓	(✓) 2 out of 3
Answering questions	✓	skip	✓	(✓) teacher	✓
a) <i>Wohin</i>	✓	(✓) Wien, Österreich	✓	(✓) teacher	✓
b) <i>Wo</i>	✓	✓	✓ spend a lot of time	skip	5(✓) made up
c) Activities	✓	(✓) made up	✓ look up only	(✓) teacher	✓
d) <i>Wetter</i>	(✓) made up	(✓) made up	✓ look up only	✓ spend a lot of time	10(✓) made up 6✓
e) Hotel	✓	(✓)	✓	✓	11(✓) English
f) Hotel features: swim, eat, park, smoke	✓	made up	✓	✓	Site
g) Price	✓	skip	✓	✓	7✓
h) <i>Teuer</i>	✓	skip	✓	✓	8✓
i) Reason (dependent clause word order)	(✓) teacher	(✓) teacher	✓	(✓) partial	9(✓)
Blackboard Posting ^a	✓	✓	✓	✓	✓
Post message	✓	✓	✓	✓	✓
Summary table	✓	✓	✓	✓	✓

Note. Numbers indicate the order in which task elements were attempted if they differed from the order in which they were presented.
^a Elements excluded from data analysis
 ✓ : successful completion of task element
 ✓ dictionary: successful completion of task element with dictionary
 (✓): completion of task element only with the help of the teacher, other students, and English site. Or incomplete task element
 -- : element completed unsuccessfully
 skip: task element skipped

They also spent a considerable amount of time reading about different activities in their selected destination so that they simply ran out of time. L was working with a different group before moving back to her assigned computer as her partner arrived approximately nine minutes late. L explained the task to J verbally and they proceeded immediately to looking at the Website of one of the cities. After the teacher intervened, they went back to the first task of choosing activities they would like to do on a vacation. They progressed linearly through the task from that point on, but required the teacher's assistance for the three questions they answered, skipped the question about the weather, and spent an extended amount of time on searching for a hotel before class time expired.

The visual representation of successfully completed task components presented in Figure 43 illustrates similarities and differences in task success over time. Three dyads, F/B, M/J, and D/C displayed a rather constant pattern in terms of how many task elements they were able to complete successfully. Two dyads, J/L, and R/C completed relatively more task components in Task 2 compared to both the first and last WebQuest. R and T, the dyads composed of two students with prior German learning experience, performed the least successfully overall. Most of the task elements they completed were not successful, since they were off-track in terms of the instructions for a large amount of time. Consequently, the number of successfully completed task components is consistently low. However, they are the only group exhibiting a steady increase in the number of successfully task components. These results will be illustrated in more detail when the dialogic engagement of each dyad is discussed, but first, the overall patterns of strategic behavior will be presented by task.

Figure 43. Successful Completion of Task Components by Dyad



Overview of Strategic Behaviors by Task and Dyad

As discussed previously, the number of Language Related Episodes remained rather constant throughout all three tasks. Table 33 illustrates that the overall number of strategic behaviors identified for each task did not vary considerable. The exiting variation can probably be explained by the overall length of episodes selected in each task. The numbers and percentages of strategic behaviors organized by category also do not reveal significant patterns of change of time. Since no inferential statistics were used to further analyze these data grouped in this fashion, the use of the terms “significant” does not carry its statistical meaning. However, most of the percentages changed by less than 2%, and the highest change was less than 5% over all three tasks. Socio-Procedural strategies increased overall from 21.3% in Task 1, to 23.3 % in Task 2, and 25.8% in

Task 3. This seems to indicate that students engaged in comparatively more task and group management behaviors, as the tasks increased in difficulty. It would be insufficient, however, to conclude the data analysis with these findings. Rather, the results validate the appropriateness of a case study methodology, which is capable of focusing on complex phenomena occurring in individual cases. Since humans are complex individuals with multifaceted personal histories, the only way to really understand their actions is through detailed analysis of the interactions and strategic behaviors as they occurred within each dyad. The presentation of result in the remainder of this chapter will be organized by dyad.

Table 33. Strategic Behaviors by Category and Task

Categories	WebQuests						Total
	Task 1		Task 2		Task 3		
Affective							
Destructive	48	(4.1)	28	(2.8)	47	(5.0)	123 (4.0)
Constructive	29	(2.6)	27	(2.7)	28	(3.0)	84 (2.7)
Contextual	58	(5.1)	42	(4.2)	24	(3.1)	124 (4.0)
Socio-Procedural	241	(21.3)	234	(23.3)	240	(25.8)	715(23.3)
Cognitive							
Mediating partner's regulation of L2 tool use	58	(5.1)	29	(2.9)	28	(3.0)	115 (3.7)
Mediating own regulation of L2 tool use	261	(23.1)	231	(23.0)	223	(23.9)	715(23.3)
Mediating collective regulation of L2 tool use	353	(31.2)	338	(33.7)	298	(32.0)	989(32.2)
Other	83	(7.3)	75	(7.5)	44	(4.7)	202 (6.6)
Total	1131		1004		932		3067

Note. Number of LREs in Task 1=30; Task 2= 31; Task 3=31. Percentages are provided in parentheses and are rounded to one decimal point.

This section features a brief profile of each student before discussing the strategic behaviors they exhibited throughout the three tasks. For more detailed information

regarding student profiles please refer back to Tables 7, 8, and 9 in chapter III. Each student dyad's task success over time can be traced in Tables 30 through 32, and the tallies for strategic behaviors are included in Appendix K.

Dialogic engagement of dyad B/F.

B was a 22-year-old male music major who had taken one semester of German diction, which did not target “language” skills other than pronunciation. As a music major, he was required to take only one semester of German with the purpose of obtaining a basic overview of the language. He described himself as an avid reader, used e-mail “constantly” and utilized the Internet frequently for research purposes. When asked about his previous experience with group work, he stated: “I play well with others”.

F was a 24-year-old female native speaker of French with prior experience in formal German instruction as a child. In addition, she had lived in Germany for several years. She did not take German for her language requirement, but rather wanted to be able to speak with her German-speaking grandparents. F stated that she did not like to read and considered herself to be a slow reader and was frequently behind in her class readings. She did not check her e-mail daily and used the Internet mainly for school and to access French Websites. During groups work, which she generally enjoyed, she “likes to be in control”, which was also evident in her interaction with her partner.

Overall, this dyad worked together successfully. They successfully completed 30 out the total 36 task elements, 10 for each Task (see Tables 30 to 32). An additional seven task elements were completed with outside resources. The most poignant aspect of

their dialogic engagement is the fact that destructive behaviors outweighed constructive ones 40 to 13 (see Table 34). Additionally, the number of constructive behaviors declined over the course of the three tasks. Of the 40 instances of destructive behaviors, 27 were coded as ignoring the partner (see Appendix K). Throughout all three tasks, F was controlling the computer as well as the pace of the task. Their role distribution matched well with their statements during the Personal History Interview. F was in control, while B adapted to the situation and tried to establish a personal relationship with his partner, by asking her about her French background, how old she was, and sharing with her that he was gay. However, she generally did not engage with him on a personal level during the first task and even ignored his task-related suggestions. The types of descriptive behavior changed over the course of the three tasks. Instances of ignoring decreased while instances of indifference, impatience, and frustration increased (see Appendix K).

These two students seemed to have opposing orientations towards the task. F was focused on moving along and finishing the overall task and did not want to spend “too much time” on any individual task element. Due to her prior German knowledge, she tended to understand the task instructions and provide the answers without consulting her partner or needing to enlist his cooperation and help. B, on the other hand was very detail oriented and particularly felt the need to understand every word used on the worksheet. During Task 1, he expressed frustration about the fact that unknown words were used on the worksheet.

Table 34. B/F Strategic Behaviors by Category and Task

Categories	WebQuest			Total
	Task 1	Task 2	Task 3	
Affective				
Destructive	14 (5.6)	12 (6.0)	14 (7.7)	40 (6.3)
Constructive	7 (2.8)	4 (2.0)	2 (1.1)	13 (2.1)
Contextual	14 (5.6)	8 (4.0)	4 (2.2)	26 (4.1)
Socio-Procedural	54 (21.7)	44 (22.1)	61 (33.3)	159 (25.2)
Cognitive				
Mediating partner's regulation of L2 tool use	10 (4.0)	5 (2.5)	8 (4.4)	23 (3.6)
Mediating own regulation of L2 tool use	62 (24.9)	62 (31.1)	27 (14.8)	151 (23.9)
Mediating collective regulation of L2 tool use	61 (24.5)	45 (22.6)	58 (31.7)	164 (26.0)
Other	27 (10.8)	19 (9.5)	9 (4.9)	55 (8.7)
Total	249	199	183	631

Note. Number of LREs in Task 1=6; Task 2=6; Task 3=5. Percentages are provided in parentheses and are rounded to one decimal point.

Even though F was clearly more proficient in German, B actively participated in the task through backchannelling, asking questions, and making suggestions. In addition, he tended to be the person responsible for looking words up in the dictionary while F continued with the task. They displayed a “divide and conquer” role distribution in this regard. However, as exemplified in Excerpt 28 F did not usually accept B’s judgments and ideas. Several times she asked him to verify his translations or suggestions in the dictionary (see Excerpt 33). In Excerpt 33, F and B are encountering the word *wirklich* (really) for the second time. F reads the question “Is the weather really good?” (line 920) as an indirect attempt to enlist B’s assistance, while B is trying to engage with the content of the question via the L2, by answering it in the negative (line 922). F then directly asks

for a translation (line 923), but questions his correct translation despite the fact that he is quite certain and provides a cognitive prompt to their first encounter with the word (line 926). She then assigns him the task of consulting the dictionary. As he complies, she checks on their task progress, indicating her product orientation. Ultimately she accepts the translation, but only after it has been verified by the dictionary.

Excerpt 33. T1_B/F

920: F: *Ist das Wetter wirklich gut?*

921: *Cr follow along; cl teb*

922: B: *Nein*

923: F: What is *wirklich*? Can you

924: B: Always, actually

925: F: It is actually?

926: B: We already did it

927: F: Make sure. Make sure, I have a doubt

928: *Sc dn at bit*

929: B: Really. Also Continuing to be, actually

930: F: We're so far. We haven't even done anything. Ohhhh Fhh

931: *Sc dn to bottom on worksheet* *summary table comes into view*

The number of strategic behaviors classified as contextual (use of the dictionary, asking the teacher, etc.) decreased significantly among the tasks. In Task 1 B and F used the dictionary 12 times compared to twice in Task 2 and three times in Task 3. For Tasks 2 and 3 they used the worksheet as a resource, which allowed them to rely less on the dictionary.

The socio-procedural strategies did not change notably over time. B and F spent a lot of their energy negotiating their collaboration. Although F was firmly in control of this dyad, ten instances of checking with partner were identified overall; this indicates that she did ask for B's approval. However, in several situations her questions such as "is that ok?" seemed to be rhetorical in nature. Rather than asking for B's opinion, she used these utterances as a way to moderate the pace of the task and usually did not wait for B's

response. These behaviors varied with the relative degree of difficulty encountered in the tasks. For example, B and F immediately comprehended the game show format of Task 2, which lead to a lower number of socio-procedural strategies in the completion of that task.

Overall, cognitive strategies mediating the partner's regulation of L2 tool use were negligible in comparison to both mediating own regulation of L2 tool use and mediating collective regulation of L2 tool use. Even though F was clearly an 'expert' in this dyad she did not provide scaffolded help to her 'novice' partner, rather, it was generally B who tried to access interlanguage knowledge or to explain a linguistic phenomenon. Being a music major, B focused on practicing the pronunciation of German words more so than any other student (see Appendix K). F responded by modeling the pronunciation for him, thereby accepting her role as the more knowledgeable peer in this regard. However, this was not evident in other linguistic areas. F employed a higher number of self-directed strategic behaviors, as she engaged in oral drafting, rereading her answers and aural prompting.

Excerpt 34 shows F trying to write "with rain or snow", without her partner's assistance. Prior to this exchange, B had offered the verb *regnen* (to rain), but F is looking for the noun *Regen* (rain) (line 215). Since her partner is not able to provide the noun, she takes it upon herself to utilize the dictionary to locate the word (line 221). She then engages in oral drafting, as she changes the verb *regnen* to the noun *regen* and finish the sentence (lines 223 and 224). She then prompts herself to capitalize the noun. The "So" in line 225 identifies the utterance as private speech, since it seems to conclude her inner speech explaining to herself that all nouns are capitalized in German. The elliptical

nature of this utterance makes it impossible for B to benefit from her statement and indicate that it was indeed self-directed. F, thus, produces a well-formed response through mediating her own use of L2 through a combination of L1 and L1 speaking.

Excerpt 34. T1_B/F

215: F: Yeah, but how do you say just rain the rain
 216: ...
 217: pages being turned
 218: Do you know how to say that?
 219: pages being turned
 220: B: No
 221: F: I'll figure it out right now
 222: pages being turned
 223: Mit Regen is... mit Regen... oder...oder Schnee.
 224: Dl nen; tp en; tp oder tp Schner
 225: So Regen ...is capital.
 226: Dl r; tp R
 227: Schnee oder... Weind Mit Regen oder Weind. Is that | fine?
 228: Tp oder dl oder tp Wind

Interestingly, in Task 3 the percentage of self-mediation dropped from 24.9% in Task 1 and 31.1% in Task 2, to only 14.8%. Additionally, strategic behaviors mediation collective regulating increased from 24.5% in Task 1 to 31.7% in Task 3. Consequently, in Task 3, collective mediation outweighed self-mediation at the ratio of approximately 2:1, which is a reversal of the pattern in Tasks 1 and 2. In Excerpt 35, taken from Task 3, B and F are working collaboratively towards writing types of vacation activities they would enjoy. F initiates the exchange by making a suggestion in English (lines 141 – 143) and directly asking for a translation into German (line 143). B immediately responds to the request and offers “jogg”, but right away rejects his own suggestions (line 144). F expresses her partial knowledge, by providing the prefix *ein* (line 145). B, then supplies the verb *kaufen* (line 146), which by itself means buy. Putting both of these pieces of

partial knowledge together produces the correct word *einkaufen*, which is first uttered by F (line 147), which B repeats in an almost triumphant manner before F types it onto the worksheet. This episode, in which both students engage in collective scaffolding, presented a positive learning opportunity and F indicates this in her closing statement in line 153.

Excerpt 35. T3_B/F

141: F: And I wanna go shopping... and
142: Tp and
143: Shopping. What's shopping?
144: B: jogg, jogg, no
145: F: I know it said like...ein
146: B: kauf kaufen... to shop
147: F: einkaufen
148: B: einkaufen hahhh
149: Tp einkaufen
150: 6:00
151: ...
152: cr circles over answers
153: F: There we go that's perfect (???)
154: sc dn

As mentioned earlier, B made several attempts to establish a personal relationship with F, to which she was not receptive during the first task, however their personal relationship grew closer over time. This trend is evident in the shift in cognitive strategies. The change in quality of interaction will be described with one example here. When asked about his attitude towards group work, B stated that he worked well with other students, as long as they accepted his homosexuality. During the first WebQuest he seemed willing to share this with his partner (see Excerpt 28), as they were deciding between *schwul* (gay) and *schwül*, (muggy). However, F ignored his cognitive prompt which ended the topic. During WebQuest 2, as they were sharing opinions about the

man's sweater, B stated that he would take the model, but not the sweater. This humorous way of initiating this personal topic, attracted F's attention, and for the first time she acknowledged his attempt at sharing personal information. Finally, in WebQuest 3, this dyad spent a significant amount of time investigating differences between the English, French, and German versions of the Vienna's Website because a gay festival was announced prominently on the French, but not any of the other sites.

Dialogic engagement of dyad C/R.

C was a 19-year-old female student who professed to being a struggling language learner. She chose German to fulfill her language requirement, but had no interest in a German major or minor. She enrolled for this particular class based on her boyfriend's recommendation, who had taken German by from this instructor the previous year. While reading a lot for her classes, R considered herself to be a slow reader. She used the Internet frequently for e-mail and instant messaging, as well as for research and to check weather and travel information. She stated that she liked working in groups, but felt that she was quieter during group work in this particular class because she did not want to speak.

R was a 20-year-old female student who had lived in Germany when her parents were stationed there with the military. During that time, she also had two years of formal German instruction. Rather than taking the class for her language requirement, her goal was to be stationed in Germany herself. She read a lot and felt that she had good retention of content. She used the Internet less frequently than her partner, checking e-mail not on a daily basis, doing research for school and only occasionally checking on movie times. R

was willing to do group work but would not choose this way of learning if she were given an option. The main reasons she preferred working individually were that she was “a complete control freak” and worried about her partner “slacking off”.

R and C completed the majority of task elements in Task 1 and 2, but only five out of 15 components in Task 3 (see Table 32). These students seemed better able to work with the concrete information about weather and shopping, than the more open-ended task of evaluating a travel destination.

Table 35. R/C Strategic Behaviors by Category and Task

Categories	WebQuest			Total
	Task 1	Task 2	Task 3	
Affective				
Destructive	6 (5.9)	0 (0)	2 (4.1)	8 (3.8)
Constructive	5 (4.9)	2 (3.4)	3 (6.1)	10 (4.8)
Contextual	3 (2.9)	3 (5.2)	1 (2.0)	7 (3.3)
Socio-Procedural	33 (32.3)	21 (36.2)	10 (20.4)	64 (30.6)
Cognitive				
Mediating partner's regulation of L2 tool use	5 (4.9)	0 (0)	1 (2.0)	6 (2.9)
Mediating own regulation of L2 tool use	21 (20.6)	17 (29.3)	21 (42.9)	59 (28.2)
Mediating collective regulation of L2 tool use	27 (26.5)	13 (22.4)	9 (18.4)	49 (23.4)
Other	2 (2.0)	2 (3.4)	2 (4.1)	6 (2.9)
Total	102	58	49	209

Note. Number of LREs in Task 1=2; Task 2=3; Task 3=2. Percentages are provided in parentheses and are rounded to one decimal point.

R and C seemed to enjoy working together. This was manifested in, sharing personal information, and joking with each other and was corroborated through their

responses during the Stimulated Recall Interviews. Due to her superior German proficiency and tendency toward perfectionism, R was in control of the task. However, both students took turns controlling the computer during the tasks. C did seem to have a higher level of Internet skills and was able to contribute to the collaboration in that respect.

Even though R had studied German before and was generally capable of understanding the instructions, she was frequently not confident in her own ability and frequently expressed uncertainty (see Appendix K), and C provided moral support to her by accepting even her tentative translations and suggestion. For this dyad, the occurrences of constructive and destructive behaviors were balanced throughout all three tasks (see Table 35). Even though only instance of humor was coded during Language Related Episodes, R and C were joking and exchanging personal information throughout. As stated previously, overall, only seven LREs were identified for this dyad, mainly because R tended to work through linguistically challenging passages individually rather than through collective dialogue with her partner. This observation is corroborated by 59 instances of mediating own regulation to only 49 instances of mediating collaborative regulation. Furthermore, the dominance of R mediating her own regulation became more pronounced representing 20.6 % of all strategic behaviors during Task 1, 29.3% during Task 2, and 42.9% during Task 3. Over time, as the task difficulty increased and R established herself firmly as the more capable of the two, self-directed strategic behaviors increased. In addition, the gap between strategic behaviors mediating own regulation and those mediating collective mediation widened over time. Despite that fact that R was

considerably more proficient in German only six occurrences of mediating the partner's regulation were identified.

Excerpt 36 shows R and C working towards comprehending Task 3. R carries the majority of the linguistic progress, by providing translations (lines 222, 233, 240), and draws on her real world knowledge acquired through her stay in Germany (lines 222, 224). Nonetheless, C actively participates in the task by managing the pace (line 216), reading in German (lines 216, 221, 234), and engaging with translations provided by her partner (lines 227, 243). In addition, by the third task, C was also more proactive in her ability to guess word meanings based on her task knowledge. After reading the question "To where would you like to travel" in German (line 234), she provides a well formed English translation in line 237, after R had only started to decode the sentence. The "normal" relationship was reestablished as C reads the next sentence and signals her inability to comprehend it via the paralinguistic utterance huh? (line 239), which is followed by a translation on R's part in line 240. While her translations were generally correct, R frequently expressed uncertainty in her own ability, as can be seen in the tag "I'm assuming" in line 242. C, however, provided support to her partner by ignoring the uncertainty and readily accepting the translation (line 243).

Excerpt 36. T3_R/C

216: C: What's the next one? Bitte schön... sie... sich...die
217: Sc dn so that Teil 2 is at center of screen
218: ...
219: ?: au
220: ...
221: C: Und...
222: R: It would be, please look at the websites for... I think these are cities cause
Interlaken

223: Cr follow along----- cr over Wangerooge
 224: is a base for the states
 225: C: What did you say?
 226: R: cities
 227: C: Oh cities
 228: R: **Interlaken** is a famous ski resort
 229: And the city.... really
 230: Cr over Stadt; cr over wirklich
 231: So, I guess please look at the website for Ww **Wangerooge** (laughs), **wein** und **Interlaken an.** (more softly) **Entscheiden Sie welche Stadt sie wirklich mögen**
 232: Mmmm (a little frustrated)
 233: Weeee..... write the information about the city I guess...
 234: C: **Wohin... möchten Sie fahren**
 235: Sc dn a few lines
 236: R: OK, that was like to... so...
 237: C: Where would you like to visit?
 238: R: Yeah
 239: C: And then... **Wo ist da... Wo ist die Stadt** huh?
 240: R: What, what is the city should be... oh where is the city
 241: Cr over teb b); cl teb b)
 242: Like what ... Austria, Switzerland or...I'm assuming
 243: C: Ah
 244: cr dn to c)

The paucity of data makes it difficult to judge change over time. R maintains and extends her dominant position throughout all three tasks, especially as they increase in complexity. Socio-Procedural behaviors were considerably lower during that last task (only 20.4% for Task 3), as these students had established a pattern of collaboration and seemed to understand the general management of the WebQuest genre. C was happy to follow her partner's lead while still finding opportunities to contribute to the dyad's success. As she grew more comfortable with the genre of the "WebQuest" she became more and more capable of providing assistance to R. C seemed to enjoy these activities as a fun way to spend the class period. In fact, in the culminating Stimulated Recall Interview she expressed the desire to conduct more of these types of activities for class sessions, as well as assessment. It should be noted, however, that while R would probably

achieve the same level of success in an individual task, C would probably not have been able to complete the same number of task components on her own. Additionally, since R did not mediate C regulation it is questionable that she would be enabled to regulate her own strategic behaviors during future tasks performed individually. However, working as a dyad created a positive learning atmosphere for both of these students.

Dialogic engagement of dyad D/C.

D was a 32-year-old female nursing student who was a mother of two who had never studied German before. She was not taking German to fulfill her language requirement but because her husband was going to be stationed in German with the military. She enjoyed reading, but did not use the Internet on a regular basis, only checking her e-mail once a week. She did utilize the Internet to conduct research for her classes, her children's schoolwork, and for leisure activities such as checking movie times and gathering information about travel destinations.

C was a 26-year-old male graduate student of Philosophy, taking this course to fulfill the language requirement for his Master's Degree. He had studied German several years ago for two semesters at a Community College. Despite being a graduate student, he stated that he did not consider himself a good reader, potentially due to ADHD. He only had Internet access in his shared office, but checked his e-mail daily. In terms of group work, he often had difficulty working in a pair because the partner was usually not that much "into it".

Of all dyads, D and C engaged in the largest number of Language Related Episodes equally distributed across tasks. While not completing any of the WebQuests

(see Tables 30 to 32), they consistently perform well in terms of successfully completed task components. Carefully examining and answering each component sequentially allowed them to be successful, but at times also caused them to spend excessive amount of time on certain elements. C was generally the more process oriented student, focusing on a detailed completion of the task, whereas the more product oriented D attempted to speed up the pace in an attempt to finish the entire task.

Table 36. D/C Strategic Behaviors by Category and Task

Categories	WebQuest				Total
	Task 1	Task 2	Task 3		
Affective					
Destructive	10 (2.8)	9 (2.8)	12 (4.1)	31	(3.2)
Constructive	6 (1.7)	9 (2.8)	15 (5.2)	30	(3.1)
Contextual	15 (4.2)	7 (2.2)	11 (3.8)	28	(2.9)
Socio-Procedural	74 (21.0)	67 (21.0)	65 (22.3)	206	(21.5)
Cognitive					
Mediating partner's regulation of L2 tool use	7 (2.0)	15 (4.7)	7 (2.4)	29	(3.0)
Mediating own regulation of L2 tool use	98 (27.8)	69 (21.6)	77 (26.5)	244	(25.4)
Mediating collective regulation of L2 tool use	113 (32.0)	117 (36.7)	86 (30.0)	316	(33.0)
Other	30 (8.5)	26 (8.2)	18 (6.2)	74	(7.7)
Total	353	319	291	958	

Note. Number of LREs in Task 1=8; Task 2=9; Task 3=9. Percentages are provided in parentheses and are rounded to one decimal point.

C possessed a slightly higher level of German proficiency and was generally the one providing word meanings and suggestions, while D focused more on managing the

pace. In this dyad, the affective category was evenly split between destructive and constructive strategic behaviors (see Table 36). As discussed in Excerpt 29, they sometimes tended to take a different route towards solving a particular problem, but ultimately established a shared reference and managed to solve the problem collectively. They thus exhibited relatively high instances of ignoring the partner and accepting his or her actions. Because both students were serious about the tasks, but had opposing task orientations, they also consistently exhibited high levels of socio-procedural behaviors.

Excerpt 37 provides an additional example of their dialogic engagement. D is in control of the computer during the exchange. Initially both students are working towards expressing “on Sunday”, however, D is not receptive to her partner’s suggestions. She engages in aural prompts (line 701 and 703) to identify the appropriate structure and decides on using *den* (the; accusative definite masculine article) in line 709, despite C’s correct suggestion to use *am* (line 711). C continuously attempts to enlist his partner’s cooperation in changing their answer (lines 759 – 761; 765-766), but she is not receptive to his attempts as long as she is searching for information on the Internet (lines 763, 764; 767 – 778). In line 780, C becomes a bit more forceful and directly suggests to D to edit their answer. This time she is willing to engage in his suggestion (line 782). Interestingly, by this time, C has changed his suggestion to a literal, but incorrect translation in this context (line 787). Both students establish a shared reference by restating their target form (line 790), and D ultimately accepts her partner’s suggestion, even though she did not fully understand the lexical item, which is obvious by her inability to spell it.

Excerpt 37. T1_D/C

701: D: Und... in... no, und ... und ist and...
 702: ...
 703: den?
 704: ...
 705: tp de after Das wetter ist schlecht
 706: C: Das Wetter is schlecht... uhm. What, what do you...
 707: D: Sonntag...
 708: C: What are you trying to say?
 709: Tp n
 710: D: trying to say: on Sunday...
 711: C: uhmmm. Am, I think is on...
 712: ...
 713: tp Sontag
 |
 |
 759: C: I'm just wondering about the ahm...
 760: Sc dn
 761: the one word you used... den...
 762: cr circles over beginning of schlechtes Wetter
 763: D: OK. Let's see...now, | where do we think...?
 764: cl on teb for schlechtes Wetter
 765: C: I think am is what we want to use here...
 766: a-m
 767: D: I'm going to say...
 768: I would like to say...
 769: Let's see if they have weather for...
 770: Tp Seoul
 771: Seoul... Korea ...
 772: Tp Korea
 773: ok...
 774: ...
 775: cr dn and up and dn to "Die Fakten"; cl teb; tp Seoul Korea
 776: ...
 777: dl teb for additional information
 778: OK, let's see...
 779: Cr over mwt Yahoo
 780: C: Can you... can you change that word for me?
 781: Cl mwt Yahoo
 782: D: Where?
 783: C: The den.
 784: Cl mwt worksheet
 785: Right there.
 786: Sc up to Teil 2
 787: To auf.
 788: D: Auch?
 789: Cl between schlect and den
 790: C: yeah. We wanna say on Sunday, right?

791: D: Does that mean in, or on?...
 792: Dl den
 793: Auf
 794: Tp alf
 795: C: Ah, no.. a-u-f auf
 796: D: (laughs)
 797: I thought you said alf (laughs) ok.
 798: Auf... Sonntag... es schneit.
 799: And if you want to go back and you know put some more stuff in.. you can ...

As part of their collaboration, they took turns using the mouse and typing. They were receptive to each other's questions and hypotheses. C was only slightly more proficient in German than D at the beginning of the course, but D caught up quickly over the first few weeks of the class. However, D did engage in some instances of mediating his partner's regulation through interlanguage knowledge (ILK) and explanations (Explain), see Appendix K. Task 2 gave rise to the highest numbers of these strategic behaviors (4.7%). Numbers seemed to present an opportunity for mediating the partner's regulation of L2, as C prompted his partner to produce the numbers in German and assisted her through explanations and modeling (see excerpt 38). Furthermore, Task 2 also produced a relatively low numbers of self-mediation and high numbers of collective strategic behaviors. The concrete task of locating specific information and exchanging opinions lead to the highest level of collaborative problem solving for this dyad.

In Excerpt 38, D and C are converting prices provided in Euros to US dollars to gauge whether or not the items are expensive. Again, D demonstrates her product orientation, as she focused on the difference between the two currencies (line 724), whereas C views these numbers as an opportunity to practice numbers in German. While he is not successful in prompting D to say the numbers in German, she nonetheless shows

her willingness to engage in this linguistic puzzle, by challenging C to produce 689 in German (line 742) and discussing the order in which numbers are pronounced in German.

Excerpt 38. T2_D/C

714: D: 34.99
715: DI 34,99
716: ...
717: C: Auf Deutsch (laughs)
718: Tp 34,99
719: Vierunddreizig
720: D: oh..
721: C: neunundneunzig
722: Cl umrechnen
723: Ahm...
724: D: 37.51... Doesn't seem to be that far away...
725: C: siebenunddreißig Einundfünfzig
726: D: But is there really, is there a method to the (???).. I don't know...
727: ...
728: mwt worksheet
729: C: siebenunddreizig einundfünfzig...
730: Tp \$ 37.51
731: Ist das teuer?
732: Ja...
733: Tp Ja
734: Alright... So it's 6 89 for the what ever...
735: Sc dn to Schrank
736: D: the schaf... schaf
737: Mwt Yahoo rechner
738: D: Schlafzimmerschrank...
739: DI 43,90
740: C: Schlafzimmerschrank.
741: Tp 689
742: D: Alright...I didn't hear you say 6-89, though...
743: Cl umrechnen button
744: (laughs)
745: C: oh, ahh
746: D: I don't even know how you would say that. Would you say 89... 600?
747: C: No, it's just the 10s numbers that are backwards...
748: Mwt Otto; mwt Yahoo rechner
749: From then on it's forward. You go sechshundert neunundachtzig
750: D: ohh ok
751: C: mm
752: D: sechshundert neunundachtzig
753: C: US Dollar
754: D: How much was it in dollars? You got it right?

755: C: Es ist... mmm
756: Mwt worksheet
757: C: hmmm
758: Siebenhundert acht...und dreizig einundsechzig
759: Mwt Otto; mwt Yahoo rechner
760: D: Alright...

With 26 and 32 years-of-age, R and C were the oldest students in the class. Both were successful students with a serious interest in learning the language rather than simply completing a language requirement. The self-selection process seemed to have worked well for these students. In the Personal History Interview C had expressed some negative experiences in previous group work, because his partner(s) were not invested in the task. In his pairing with D, he found an equal partner invested in the learning process. In addition, in the final Stimulated Recall Interview, D expressed a positive attitude towards the WebQuest activities.

Dialogic engagement of dyad L/J.

L was a 20-year-old female student who did not participate in a Personal History Interview. L had already studied German for four years in Junior High School and High School, and was taking the course to fulfill her language requirement. During regular class sessions, L did not participate actively in group activities, but rather sat by herself and was very quiet in class.

J was a 19-year-old male student who had no previous experience with formal German instruction. He was enrolled in the course to fulfill his language requirement, but also because a summer trip to Berlin as a missionary sparked his interest in the language in order to return. J did not enjoy reading and stated that he would “watch the movie over reading the book”. He did check his e-mail daily and frequently used the Internet to

access movie times, news, and entertainment, to shop on e-bay. While he generally enjoyed group work and preferred it in comparison to a lecture, he expressed more hesitation to participate in group work in the German class, because of the large number of more advanced students in the course. Furthermore, he admitted to struggling in the class, despite spending considerable time on homework and study and felt that the high number of more advance students made him feel uncomfortable and disadvantaged at times.

This dyad was comprised of two very different students from very different backgrounds who seemed to have been paired simply because they were seated in proximity to each other in class. This dyad's task success and number of Language Related Episodes varied greatly across tasks (see Tables 30 to 32). L and J only successfully completed six of the 15 task components in Task 1. This can be mainly attributed to J's process orientation. While L was considerably more proficient in German, J was in control of the computer during the majority of time in all tasks. During Task 1, instead of testing the weather for the city they had predicted to have good weather that day, he insisted on finding good weather, and consequently spent the majority of the time searching the world for weather that perfectly matched their description. In Task 2, they successfully completed 14 out of the 16 task components. This task allowed L to follow her passion for shopping. In addition J's detail orientation also helped them in locating the specific items listed on the worksheet. Task 3 presented a special case, since J arrived 9 minutes late and L had worked with a different group until her partner joined her.

Constructive strategic behaviors slightly outnumbered those classified as destructive (see Table 37), which speaks to the overall positive collaboration environment these students established during the WebQuests. They shared personal information and joked with each other, and by the third task seemed to have established a rather good rapport.

Table 37. L/J Strategic Behaviors by Category and Task

Categories	WebQuest			Total
	Task 1	Task 2	Task 3	
Affective				
Destructive	3 (2.0)	0 (0)	3 (4.5)	6 (1.7)
Constructive	4 (2.6)	2 (1.6)	2 (3.0)	8 (2.3)
Contextual	9 (6.0)	4 (3.3)	3 (4.5)	16 (4.7)
Socio-Procedural	18 (11.8)	18 (14.6)	12 (18.0)	48 (14.0)
Cognitive				
Mediating partner's regulation of L2 tool use	1 (.6)	2 (1.6)	1 (1.5)	4 (1.2)
Mediating own regulation of L2 tool use	32 (21.0)	23 (18.7)	20 (29.9)	75 (21.9)
Mediating collective regulation of L2 tool use	72 (47.1)	59 (48.0)	24 (35.9)	155 (45.2)
Other	14 (9.2)	15 (12.2)	2 (3.0)	31 (9.0)
Total	153	123	67	343

Note. Number of LREs in Task 1=6; Task 2=5; Task 3=3. Percentages are provided in parentheses and are rounded to one decimal point.

The most striking feature of their collaboration is the virtual absence of any behaviors mediating the partner's regulation of L2 tool use (see Table 37). L was clearly a more knowledgeable peer in terms of L2 proficiency, but she did not attempt to provide

a scaffold for her partner. Instead, both students engaged in behaviors mediating their own regulation, primarily aural prompting and private speech. However, during the first two tasks almost half of their strategic behaviors could be classified as collective. The relatively high numbers of suggestions that were then negotiated can be attributed to the division of labor in this group. Since J was controlling the mouse and the keyboard, L had to influence his actions in applying her proficiency to the task. However, her suggestions were directed at task completion rather than at assisting J in developing self-regulation over the task. In Excerpt 39, for example, L dictates the answers to J, who is in control of the computer, and spells the words that prove to be problematic. However, she does not invite him to hypothesize or engage in other scaffolding behaviors.

Excerpt 39. T1_L/J

135: L: **Schlecht wetter... schlecht wetter is**
 136: ...
 137: **cl teb schlechtes Wetter; dl teb**
 138: **Sehr kalt... und ...** **regnet**
 139: **tp Schlechtes** **tp Wetter ist**
 140: J: Is..
 141: L: **Sehr co.. kalt**
 142: **tp sher**
 143: L: S e- h r ... **sehr** ... s e- h r
 144: **dl sher** **tp shh dl hh, tp ehr**
 145: L: K a.. k a l t
 146: **tp kalt**
 147: Ahmm
 148: ...
 149: It's very cold **und**
 150: **tp und**
 151: S: Have you saved recently? Could you save for me?
 152: **reg... regnet**
 153: **tp regnet**

The difference in linguistic proficiency and personality factors contributed to very little change over time. Overall, the students seemed to work together well. There were no instances of friction, and the students engaged in friendly banter (see Excerpt 40), in which the students and the teacher (S) are joking about fish net panty hose displayed on the screen. During Task 2, particularly these students commented on each other's fashion sense, which were quite different.

Excerpt 40. T2_L/J

267: J: They're sexy
268: [Cl picture](#)
269: S: *Es ist teuer, aber sexy (laughs)*
270: J: [Ja...ja...](#) I like the panty hose too
271: [Cr over model's leg](#)
272: L: Nice panty hose (ironically)
273: S: *(laughs)*
274: L: Now I know how you're gonna dress your girl friend
275: [Cl back button](#)
276: J: Ahh, she already has a pair of those
277: [Minimize Otto](#)

Despite the generally positive climate, the difference in proficiency and orientation towards the task precluded this dyad from reaching true intersubjectivity. Because L did not participate in the Personal History Interview, no data are available regarding her attitude toward group work. However, during in-class group work, L tended to prefer working by herself rather than joining other student groups. In fact, while L and J self-selected each other by putting their names next to each other on the sign-up sheet, they did so after the majority of other students has already formed dyads, thereby forming a pair "by default". J indicated a preference for group work over a lecture format, but also stated a sense of insecurity in this course due to the large number of

students who had previously studied German. In the final Stimulated Recall Interview, which was conducted without L, J mentioned that he would have preferred to work with a partner closer to his own proficiency level.

Dialogic engagement of dyad M/J.

M was a 20-year-old male student with no prior experience with German. He was enrolled in this course to fulfill his language requirement but also had some family connection to the German language. Furthermore, he was a philosophy major with an interest towards studying in Germany, where philosophy has a long tradition. M reads a lot and considered himself to be a good reader. He was a self-proclaimed “Internet geek”, spending 84 hours a week online. He had an ambiguous attitude towards working in pairs or small groups, stating that while working in groups he was not always able to take control over the direction taken by the group.

J was a 19-year-old female student who also had not previously studied German. In addition, she missed the first two weeks of this course due to a family medical emergency. Consequently, week three, during which the first WebQuest was conducted, was her first full week in class. J was not enrolled in German to fulfill her language requirement, but rather because she was drawn to the language by a German film and considered majoring or minoring in German. She enjoyed reading and used the Internet on a daily basis for checking e-mail using instant messenger, checking news, travel information and movie times. She also expressed some reservations towards group work that echoed those put forth by M: she would prefer to have more control over the task

than any one member of the group usually has (see Table 15). In addition, she expressed a sense a shyness, which resulted in her preference for working quietly by herself.

M and J were among the most successful dyads in terms of task completion. With 30, M and J successfully completed the most task components overall (see Tables 30 to 32), tied with M and J. For Task 1 and 2, they were able to post their results to the Bulletin Board and were clearly pleased with their high level of overall task completion.

Although neither student had studied German in the past, M was the relative expert, since J had missed the first two weeks of the class. Given his self-image as an “Internet Geek” is it not surprising that he was the student controlling the computer during all three tasks. As illustrated in Table 38, constructive strategic behaviors consistently outnumbered those classified as destructive, which might start to explain, why, of all the dyads, M and J’s dialogic engagement changed the most over time. J became more able to and confident in contributing to the task process and these two students developed a close personal friendship.

This increased engagement in collaborative dialogue can be traced through the number of Language Related Episodes exhibited by this dyad. Only three short Language Related Episodes were identified in each of the first two tasks, while they exhibited six LREs during Task 3. Especially during the first task, J was not able to contribute grammatical or vocabulary help and was shy in her interactions with M. Generally her voice was so low and her utterances so tentative, that they were barely audible on the audio recording. While M worked through the task elements virtually without assistance, she was nevertheless actively participating in her own way. She provided frequent backchannel clues and suggestions in English, which assisted M in his attempts to

translate the German text into English, or in searching for alternate words and phrases he might use in a written response.

Table 38. M/J Strategic Behaviors by Category and Task

Categories	WebQuest						Total	
	Task 1		Task 2		Task 3			
Affective								
Destructive	1	(1.1)	0	(0)	2	(1.2)	3	(.7)
Constructive	4	(4.5)	5	(3.5)	4	(2.4)	13	(3.3)
Contextual	12	(13.5)	11	(7.7)	6	(3.7)	29	(7.3)
Socio-Procedural	24	(27.0)	49	(34.3)	31	(19.0)	104	(26.3)
Cognitive								
Mediating partner's regulation of L2 tool use	6	(6.7)	3	(2.1)	3	(1.8)	12	(3.0)
Mediating own regulation of L2 tool use	18	(20.2)	31	(21.7)	51	(31.1)	100	(25.6)
Mediating collective regulation of L2 tool use	19	(21.3)	41	(28.7)	63	(38.4)	123	(31.1)
Other	5	(5.6)	3	(2.1)	4	(2.4)	12	(3.0)
Total	89		143		164		396	

Note. Number of LREs in Task 1=3; Task 2=3; Task 3=6. Percentages are provided in parentheses and are rounded to one decimal point.

In Excerpt 41 M initially types the sentence unsupported (line 376) until he reaches an obstacle and verbalizes that fact to his partner (line 379). While J is not able to provide a German translation, she offers an English alternative (line 380), and further supports her partner's cognition in line 384 by keeping the thought process going.

Excerpt 41. T1_M/J

375: ...

376: tp Nein (bold); dl Nein; tp Nein (not bold); tp das V; dl V; tp Wvet; dl vet; tp etter

377: M: Ahh
 378: ...
 379: I want to say like the weather gets much better, | but...
 380: J: It improves...
 381: M: but I don't know | how to say gets much better
 382: J: but I don't know how
 383: ...
 384: Could we say anything?
 385: M: Ahm
 386: J: Or best not translate
 387: M: Ahm, look it up.
 388: Give it a shot
 389: ...
 390: improve
 391: (mumbling) That's the thing I don't know how to translate a verb you have to conjugate

In addition, she attempted to look for translations in the dictionary, even though she was generally not able to locate the base form and M tended to take over. The reliance on contextual strategies, such as the dictionary, decreased over time for this dyad (see Table 38). The number of Socio-Procedural strategic behaviors was low as M solved the first task mainly without J's input and increased during Task 2 as she started contributing to the overall task process. The lowest number was found in Task 3, as by the time, these students had established a close friendship and did not need to spend much energy on organizing their collaboration and had also grown comfortable with the WebQuest genre. However, this was the only task for which they did not manage to post to the Bulletin Board. As they increasingly engaged with each other collectively, task completion required more time. The relative frequency of collective mediation increased from 21.3% in Task 1 to 28.7% in Task 2, and ultimately to 38.4% in the final task. Whereas M engaged in what appeared to be an individual task with "an audience", the two students became a collective team over the course of the semester.

Furthermore, as J was increasingly exerting influence of M's actions on the computer they engaged in more collective mediation. In fact, in the third task J suggested the correct modal word order M (see excerpt 42). Again, M typed silently until he reached an obstacle. Rereading the existing part of the answer, J suggested the phrase "to go" in English, as M typed the German *gehen*. In line 110, J suggests moving the main verb *gehen* to the end of the sentence, but M confidently rejects her suggestion and explains his incorrect answers upon her questioning. Only as the teacher scaffolds the word order in line 172 does M realize J's suggestion was correct and admits his error to his partner (line 174).

Excerpt 42. T3_M/J

98: ...
 99: tp Wir wollen
 100: M: ahm
 101: J: we | want
 102: M: We want
 103: J: to go. *Gehen*
 104: Tp *gehen*
 105: M: *am... in*
 106: Tp *im; dl im; tp am; dl am; tp in*
 107: ...
 108: M: Schw
 109: Tp *Switzerland*
 110: J: Would *gehen* be the end?
 111: M: No.
 112: J: No?
 113: M: It's just saying. We want to go
 114: J: Oh ok
 115: M: so...alright
 |
 172: Wir wollen Schokolade...
 173: M: *essen*. Oh yeah, right right I got it
 174: You were right. I'm an idiot
 175: J: No
 176: *DI essen ; tp at end of sentence*
 177: M: Whenever I say that you immediately no?
 178: (laughs)

179: J: (laughs) No... you're not though

Dialogic engagement of dyad R/T.

Even though R participated in the Personal History Interviews, due to technical difficulties, no record exists of the Interview itself. R was a 19-year-old male student who had taken three years of German in High School and lived in Germany for seven years, while his family was stationed there with the military. He was taking German to fulfill his language requirement and also expressed interest in a German major or minor. However, he admitted that another reason for enrolling in first semester German was to improve his GPA.

T was a 21-year-old male student who had studied German for one year in High School, four years prior. In addition to fulfilling his language requirement, he was also enrolled in this course because German tied into his International Business major. He was interested in spending a Study Abroad period in Germany. T considered himself to be a good reader, but admitted to getting easily distracted. He checked his e-mail at least twice a day and used the Internet frequently for shopping, conducting research, and to take online courses offered at this institution. He expressed an overall positive attitude towards group work and stated that he often took on the role of “group manager” because he was a perfectionist.

The reader will remember that these two students did not self-select each other, but were paired by the teacher during the first WebQuest. Both students had previous German instruction, however, as illustrated in Tables 30 to 32, this dyad completed the least number of task components successfully for both Task 1 and Task 2. In all three tasks, these students exhibited a disproportionately high number of elements completed

with outside help, incorrectly, or out of sequence. Of the 15 LREs identified in their transcripts, nine related to answering and only four to comprehending the worksheet, which might start to explain why they tended to lack an understanding of the task and required several teacher interventions.

They had very different backgrounds, goals and attitudes. T was more process oriented and seemed focused on “doing a good job” in completing the assignment, whereas R seemed to be interested mainly in making it through another class session without drawing negative attention from the teacher. Statement such as: “I don’t care”, “whatever”, “let’s move on”, “that’s good enough”, are evidence of this orientation. These behaviors, mainly on R’s part, resulted in a 35 to 10 ratio of destructive to constructive strategic behaviors (see Table 39).

This particular dyad seemed defined by power struggle, in several ways. Both students took turns operating the computer. They did not share the same task orientation, as mentioned earlier, and also were concerned with who had the superior command of German. This competition was particularly evident in Task 1, in which both students tried to mediate each other’s regulation, but neither one was ultimately successful.

Table 39. R/T Strategic Behaviors by Category and Task

Categories	WebQuest			Total
	Task 1	Task 2	Task 3	
Affective				
Destructive	14 (7.6)	7 (4.3)	14 (7.7)	35 (6.6)
Constructive	3 (1.6)	5 (3.1)	2 (1.1)	10 (1.9)
Contextual	5 (2.7)	9 (5.6)	4 (2.2)	18 (3.4)
Socio-Procedural	38 (20.5)	35 (21.6)	61 (33.3)	134 (25.3)
Cognitive				
Mediating partner's regulation of L2 tool use	29 (15.7)	4 (2.5)	8 (4.4)	41 (7.7)
Mediating own regulation of L2 tool use	30 (16.2)	29 (17.9)	27 (14.8)	86 (16.2)
Mediating collective regulation of L2 tool use	61 (33.0)	63 (38.9)	58 (31.7)	182 (34.3)
Other	5 (2.7)	10 (6.2)	9 (4.9)	24 (4.5)
Total	185	162	183	530

Note. Number of LREs in Task 1=5; Task 2=5; Task 3=5. Percentages are provided in parentheses and are rounded to one decimal point.

In Excerpt 43, R and T are trying to express “until Sunday”. T suggests *bis* (line 1375), but R, who was in control of the computer during this exchange types *bist* (are) (line 1376). T then tries to make R aware of the mistake first by repeating the correct choice in isolation (line 1378) and then in examples. However, R rejects his suggestions and even expresses impatience with his partner (line 1388).

Excerpt 43. T1_R/T

1369: T: This Sunday... until Sunday...
 1370: [Cr circles; mwt worksheet](#)

1371: R: OK
 1372: T: Going to Saturday...
 1373: R: (???)
 1374: T: done Sunday.
 1375: **Bis**
 1376: **TP bist**
 1377: R: **Bist** (OVERLAP)
 1378: T: No **bis**
 1379: R: What?
 1380: T: Wa... **bis spatter?**
 1381: R: **Bist**, right here.
 1382: T: No.. nono **tschüß, bis spät..** what do you say with the st on it?
 1383: R: **Bist**
 1384: T Or with s
 1385: R: Yeah, no **Bist bist**
 1386: T: (???)?
 1387: R: ahmmm...
 1388: **Bis Sonntag..** fuck it
 1389: **TP Sonntag**
 1390: T: Hey, how . I remember saying **tschüß bis später** ... but never...
 1391: R: There we go.

R drew on his personal experience of living in German, whereas T referenced more “academic” knowledge such as grammar rules and conversion. The numbers for this category dropped from 15.7% in Task 1, to 2.5 % in Task 3 and 4.4% for Task 3. As they struggled over control over the task, they consistently engaged in relatively high numbers of collective mediation, with heavy use of questioning the partner’s suggestions and asserting one’s own (see Appendix K). Task 2 exhibited the most collective problem solving, even though it was accompanied by some tension. It appears that the more concrete task of finding specific information in which the Web itself provided evidence for success and failure led to higher levels of collective scaffolding as these two students discussed their suggestions.

Socio-Procedural strategies were employed most frequently during Task 3, as T manipulates the computer and tried (generally unsuccessfully) to enlist R’s cooperation.

In several instances, T stayed on-task, while R concerned himself with upcoming class events such as the oral exam.

The underlying competitive nature between these two students did not change over time. However, they were better about completing the task elements as they became more used to each other's personalities. In addition, they realized after the first task that they did not perform to their best ability and attempted to pay closer attention to the task instructions, which was difficult for them, as they had a tendency to jump immediately to the Internet without reading all of the task elements. Furthermore, after the low completion rate exhibited by this dyad in Task 1, the classroom teacher tried to provide more interventions when necessary. Since both students in this dyad were more advanced than their peers, the instructor did not check on their progress as frequently as for some of the other groups. The role of the teacher is not evaluated in any detail in this investigation, but is flagged here for future research.

Summary

In this chapter, procedures of data management have been explained and data analysis for each of the three research questions has been provided. The beginning GFL students who participated in this study exhibited intricate combinations of the psychological tools L1 and L2. The physical tools, chiefly the computer, framed the activity and their socio-historical associations were altered to some respect by their involvement in the task. Strategic behaviors employed by student dyads were divided into six categories, which act as a descriptor of dialogic engagement. Cognitive strategic behaviors were further divided into the three subcategories of mediating a learners' own,

the partner's, or collective regulation of L2 tool use, and were related back to levels of regulation. Finally, each dyad's dialogic engagement was analyzed in detail to trace change over time. Each dyad exhibited a unique pattern of regulation and mediation, which was influenced by their task orientation, goals, and attitudes towards pair work. The following chapter will discuss the implications of these findings for the theoretical frameworks that have influenced this investigation, namely SCT, SLA, and L2 Reading.

Chapter V Discussion

Several theoretical frameworks have informed this investigation, namely Sociocultural Theory, Second Language Acquisition, and Reading in a Foreign Language. In this chapter, the results described in chapter IV are synthesized and discussed. Theoretical, methodological, and practical implications will be provided and directions for future research will also be outlined.

This microgenetic case study of college beginning GFL students working in pairs toward the completion of a series of three WebQuests examined three research questions. Question 1 was concerned with identifying the mediational tools used by the students. Strategic behaviors and the resulting dialogic engagement were the focus in Question 2. For Question 3 change over time was traced as the task increased in difficulty.

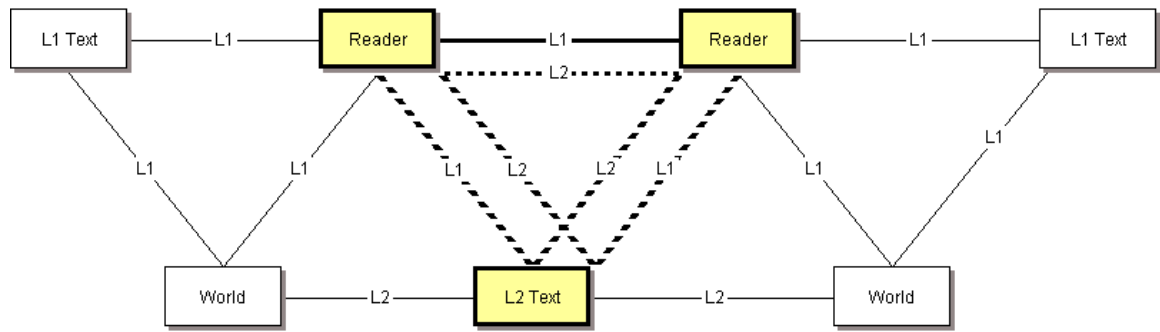
Discussion of Finding for Question 1

Research Question 1 examined the various mediational tools student dyads accessed in their attempts to complete the WebQuest activities. The tools were first divided into psychological tools and physical tools, also known as mediational artifacts. Psychological tools utilized by students in this research were English (L1) and German (L2) in various complex combinations. One of the students (F) was a native speaker of French with near native ability in English. She, also, relied on her L1 (French) at time during the WebQuest. For purposes of discussion here, the label L1 will be applied to

English in this discussion. Mediational artifacts were those resources present during the activities, such as the computer, the worksheet, and a pocket dictionary.

In order to frame the discussion of psychological tool use, the activity of L2 reading is modeled in Figure 44. It illustrates both the problem reading in a foreign language presents for adult language learners and the two systems of psychological tool use in which these students are engaged. Students participating in this study were all literate in English. While different reading proficiencies and reading habits were reported in the Personal History Interviews, all students possessed the ability to comprehend written texts in English. Following Cole and Engeström's 1993 model of children's L1 reading acquisition, the adult students engaging in L2 reading acquisition have access to a well-formed system for making sense of the world through L1 texts. This system is represented as the solid triangle connecting the student, the world, and the L1 text. As part of this system, students employ English (their L1) to mediate and regulate their own cognitive processes on the intramental plane. In other words, they control their thoughts, their attention, and other strategic behaviors through English via internalized dialogic structures. In addition, the L1 is also their primary tool for exerting control over other people on the intermental plane. Despite an emphasis to facilitate oral interpersonal communication during the German class, English was the natural choice of language when two native speakers of English engaged in problem solving. This well-formed mediational system is indicated by the solid line between the students.

Figure 44. A Model of Psychological Tool Use in Adult L2 Reading



In contrast to the situation in children's L1 reading acquisition, first semester foreign language students have neither several years of exposure to oral language nor do they have control over the lexical and phonological system of the language in which they are asked to read texts. On the other hand, college students are experienced learners and have engaged in the activity of formal schooling for a number of years.

The WebQuests assigned to participants in this research required students to read German text both on the worksheet and on the Internet with the purpose of producing German answers in response to a series of questions. Since for most students English was not only the primary but the only psychological tool they had at their disposal, they quite naturally tried to mediate comprehending and producing German text through the L1. However, as indicated by the dotted line between each student and the L2 text, English was not a sufficient tool to mediate these actions. To further complicate the problem-solving task, German by itself was also not an adequate tool for these students due to their lack of linguistic proficiency. Both lines indicating the students' engagement with the text are consequently dotted, representing a partially formed mediational system.

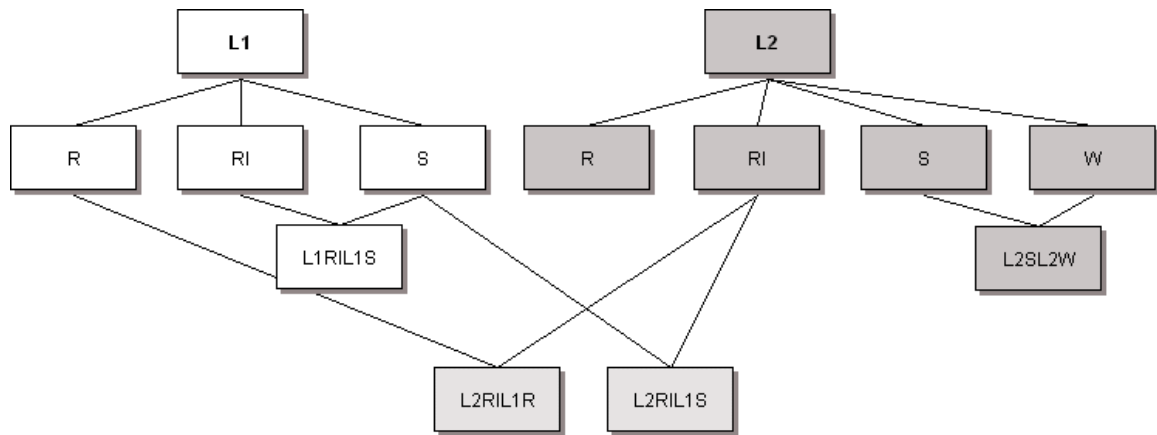
How the L2 ultimately develops into a mediation tool over which students maintain self-regulation represents the overall process and goal of L2 reading acquisition.

Within this study, the primary interest lay in the development of mediational tool use within the center triangle formed by two students and the L2 texts they were comprehending and producing. While much of SLA has maintained a separation between the L1 and the L2 and has focused on either one or the other, this study found that the connections are intricate and the boundaries are fluid. As students attempted to solve linguistic problems such as finding a hotel on a German medium Website and stating their opinions about articles of clothing, they chose the tool or combination of tools they deemed most appropriate. Beginning GFL students in this study were only rarely capable of completing task elements without using a variety of physical and psychological tools, chief among which was their native language.

As described in chapter IV, the WebQuest tasks prompted students to use both languages and the various sub-skills (reading, writing and speaking) in 11 combinations (see Figure 45). Since this investigation is mainly concerned with SLA, the use of German as a mediational tool and the mixing of psychological tools will be the focus of this discussion. The relationship between tool choice and regulation will be established. A central theme in SCT, regulation refers to the level of control an individual has over solving problems. Progression from object-regulation to other-regulation to partial self-regulation and culminating in self-regulation (Aljaafreh & Lanolf 1994, p. 470) constituted development. In self-regulated activity, mediational tool use and strategic behaviors have become internalized and automatic so that an individual is able to solve the problem without overt assistance. Other regulation is defined as the ability to solve a

problem only with the guidance of a more knowledgeable other, for example, a caregiver, tutor, teacher, or more knowledgeable peer. How the choice of tool indicates levels of regulation is the focus of the following sections.

Figure 45. Overview of Psychological Tool Use during Collaborative Online Reading



Reading in the L2 (L2R) occurred in two forms: either students inserted specific German words into an utterance which represented a translation into English (see Excerpt 29, line 104), or they read entire phrases and sentences in German. Pronouncing a single German word within an otherwise translated utterance often indicated a linguistic problem over which the student had lost self-regulation. Reading the word aloud thus indicates the problem to the partner, but also serves as a mechanism to regain self-regulation; to understand the word. Pronouncing German words signified that the sound system had been appropriated to some extent whereas the semantic and grammatical content remained inaccessible. In some instances, students were not able to, or chose not, to verbalize unknown words and phrases, and resorted to pointing to unknown lexical items with the cursor. In terms of regulation, this last type of tool use represents other-

regulation. At this level, the linguistic items cannot be accessed by the student without assistance, but he or she exhibits “cognitive preparedness” (Aljaafreh & Lantolf, 1994). Students who were able to pronounce the word, but did not know its meaning, were still other regulated, but had, in fact, attained a slightly higher level of regulation. While it might be argued that simply reading an L2 word aloud does not represent using the L2 as a psychological tool, the findings in this study indicate that it does function as a mechanism to access linguistic content, thereby starting the process of appropriation.

Reading German text in a more stand-alone manner (in utterances not containing English) served several functions: indicating a problematic lexical item (as described above), establishing a shared reference (communicating to the partner which text element is being examined), or self-regulation over the linguistic information and an attempt to engage with the text solely through German. These functions can be distinguished largely through intonation and the immediate context within which the utterance occurred. The pair work organization of the task made it necessary for students to establish shared reference, which involved making sure they were “on the same page” in terms of task management. Reading titles, questions, or keywords in German aloud acted as a mechanism for enacting such socio-procedural strategies. These aural clues to focus their joint attention on a particular section of the task were frequently accompanied by visual prompts of pointing with the cursor. Finally, reading of questions and textual information also signaled self-regulation over the text and the task. In these cases, the purpose of reading a question was to initiate solving the problem via the L2. Instead of a quiet, slow reading of the text with false starts, repetitions and a rising intonation signaling a loss of self-regulation, students who sufficiently internalized L2 to use it without resorting to the

use of their L1 tended to read the German text confidently, fluently, and without false starts. The level of self-regulation in which the L2 serves as the primary tool to mediate text comprehension and personal interaction is the ultimate goal in foreign language teaching and learning, as it represents a fully well-formed system for controlling intermental and intramental cognitive processes through the L2. Students able to maintain self-regulation would be expected to exhibit instances of L2RL2S (L2 Reading, L2 Speaking) as they engage in commenting on and evaluating German text in German. However, students in this study did not exhibit this level of regulation. At what point in their L2 development and through what types of tasks students begin engaging in this type of tool use presents an impetus for future research, which would involve following students over the course of several years of foreign language study.

While some students in this study solved certain task components through the L2 (see later discussion), they most frequently instantiated self-regulation towards reading L2 text through translation. The code L2RIL1R was used to denote instances of this type of mixed tool use. Students who were successful in producing a well-formed translation equivalent seemed to have gained a certain level of self-regulation over the German text. However, this mixing of mediational tools also indicated that they still relied on their native language to communicate their understanding of the text. It was frequently through the attempt to translate the text into English that students realized a lack of linguistic proficiency and, consequently, engaged in a series of strategic behaviors as they engaged more deeply with the text either by themselves or collectively with their partner.

Using English in restating the task or the meaning of text element was coded as

L2RIL1S. In this case, the mixing of mediational tools was generally directed at the partner and indicated socio-procedural strategic behaviors of managing the task and the collaboration. While the beginning GFL students participating in this research used L2R as a means to focus attention, higher levels of reaching intersubjectivity towards the task were more frequently conducted via English. This finding corroborates those made by Anton and DiCamilla (1998) in peer revision tasks performed by adult beginning Spanish as a Foreign Language students, who found that students use their L1 (English) for a variety of interpsychological functions, including creating a social and cognitive space (see Appendix I). Appel and Lantolf (1994) found that speaking both in the native language as well as in a foreign language acted as a mediational tool during text recall tasks.

In addition to reading German text, students also at times used spoken German (L2S) to regulate their dialogic engagement. Certain students were more adept at or motivated to engage in this type of mediational tool use than others. As described in chapter IV, asking about a word meaning in German, identifying the appropriate gender of a noun, and praising were most frequently adopted by the participants. These uses of L2 speaking were modeled extensively by the teacher during regular class sessions. The students engaging in these strategic behaviors on their own without guidance by their teacher and, thus, appropriated these actions and were able to use them in mediating their own and/or their partner's regulation of L2 tool use.

Making suggestions and offering translations were instances in which the organization of that activity as pair work gave rise to L2 tool use as a means to exert control over the partner's actions. As a general rule, more proficient and confident

students tended to make suggestions in German, whereas students with lower levels of L2 proficiency overall and in comparison to their partners (i.e. Jo in L/J; Je in M/J, and Che in R/C), more frequently resorted to making suggestions in English.

Certain task components prompted students to utilize German. For example, Task 2 involved students in guessing and converting prices, which led a number of dyads (mainly D/C and R/T) to express numerical information in German even though it was not essential for task completion.

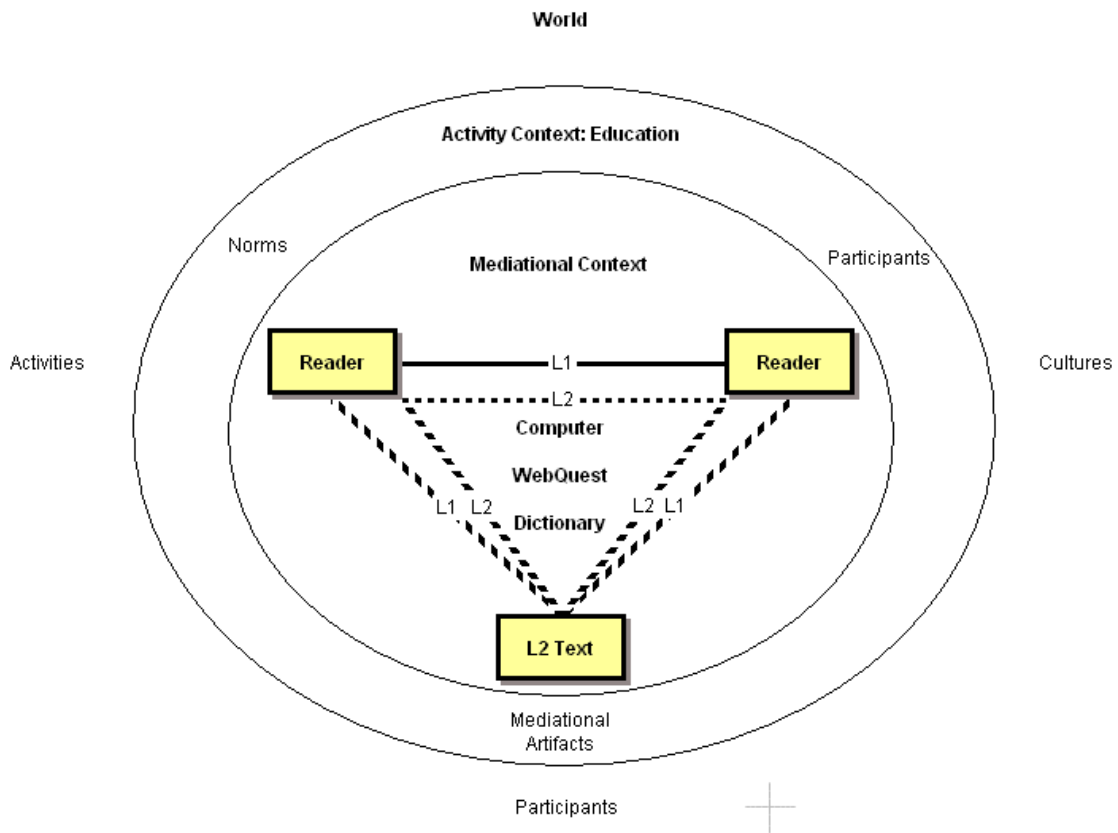
Speaking in German while writing in German (L2SL2W) was an instantiation of the strategic behavior labeled “oral drafting” and generally occurred in dyads where the more proficient partner also controlled the computer. Oral drafting served several functions on both the intermental and the intramental plane. Producing text in German is a cognitively challenging activity over which most beginning German students did not achieve complete self-regulation. Consequently, students resorted to externalizing their inner dialogue (De Guerrero, 1998; Ushukova, 1998) as a means to regain self-regulation. This phenomenon is not unique to foreign language writing and a reader will probably be able to think of instances where he or she engaged in this regulatory mechanism when working on complex sentence structures, or words with difficult spelling. The presence of the partner during this task provided a more natural setting for this largely self-directed behavior than individual work. Because of the mediating function of L2 speaking in this instance, this behavior increased the individual’s level of performance. Even without any overt assistance by the partner, the very presence of a co-learner can thus be seen as a “passive” scaffold. It has also been found that students who were encouraged to externalize their thought processes for research, continued this practice as a way to

engage in dialogue with the self. The partner, even one who is less proficient, is capable of stretching the ZPD by his or her very presence. At the same time, verbalizing while composing also served the function of focusing the partner's attention on the task and inviting discussion and revision.

The discussion will now turn to the physical tools framing students' engagement with the collaborative online reading tasks. In addition to the students, the texts, and the world, the classroom setting and the resources available therein also shape the activity. It is not, however, the item itself that creates the setting, but rather its socio-historical significance during the activity. Figure 45 illustrates a more complete model of the activity.

First, the WebQuest tasks themselves have to be seen within the context of formal education with all its socio-historical implications, represented by the circle. The tasks were assigned by the classroom teacher based on the textbook and curriculum of the first semester German class. All students were familiar with and accepted these parameters. Within the classroom, the student dyads were engaged in their problem-solving activity, but the teacher and other students also shared the same educational space. Conducting a naturalistic study allowed the researcher to observe complex interactions not only within the dyads, but across dyads and between students and the teacher. At the center of the triangle, the addition of the computer, the worksheet, and the dictionary indicates their influence on the activity. Outside the bubble of formal education lies the world, which comprises more people and other activities (such as work). The impact of the mediational artifacts is represented in Figure 46 (the computer, the WebQuest, and a pocket dictionary) and will now be discussed.

Figure 46. An Expanded Model of Collaborative Online Reading



The computer framed the activity in several respects. First, utilizing the computer made it necessary to change classrooms, placing students in a different environment with its own socio-historical significance. In this setting, many students encountered computer problems or had difficulty with computer management, such as downloading the worksheet. Additionally, entering the German-specific characters (*ü, ö, ä, ß*) posed a problem for a number of dyads. In order to enter these special characters into Word, students had to enter a number combination via the number pad, while holding down the control key. This operation was significantly more difficult for students than simply using

a pen to add two dots over a letter on paper. However, over the course of the three tasks, all students were able to type such characters first through other-regulation (using the tip sheet; being instructed by the teacher, students in other dyads, or the peer) and ultimately through self-regulation, but often accompanied by verbalizing the number combinations. These examples indicate that the new setting initially caused students to lose their self-regulation over otherwise automatized operations such as interacting with worksheets and entering answers, but also that they were able to develop towards self-regulation.

The organization of the task also impacted the activity. Rather than working individually, one student per computer, students had to share one computer. Presenting the worksheet in an electronic format meant that students had to read from the screen and answer questions by typing on the keyboard rather than writing with a pen or pencil. Because each computer only had one monitor, one keyboard and one mouse, sharing the computer created a power imbalance – the person doing the mousing and typing had more control over the task process and completion, thus giving rise to both socio-procedural strategic behaviors, but also collective mediation through making and negotiating suggestions.

One cannot simply assume that students possess basic computer skills allowing them to interact with electronic worksheets and hypertext in the same way as with paper and pencil worksheets, and printed texts. Smagorinsky (1998) and Wertsch (1985) argued that the tool alters the activity, but also that the tool is altered by the activity. The computer is not a value-free or neutral element in the educational activity, but rather changes it and is changed by it. The ways in which computers are utilized in education define their socio-historical significance. Levy (1997), for example, talks about the

computer as a tool or a tutor. This investigation allowed us to glean a small amount of information about how the computer becomes a member of the activity system during collaborative online reading tasks. The use of computers during class time presented both a problem and a resource for students participating in this study. Students availed themselves of the copy/paste feature as a way to off-load the cognitive demand (Salomon, 1993) of remembering the spelling of long words. The online translator (used only by M and J) also lowered the cognitive load of looking up a German word in the dictionary, since it made it unnecessary to know the base form. The cursor became an extension of the body as students used it to point to specific lexical items to draw their partner's attention to it. Cursor circles present a behavior that warrants future research. At times, fast jagged movements of the cursor over the screen, while waiting for a new page to load, seemed to function as way to control the frustration level, while slower more deliberate circles seemed to follow the student's eye gaze while scanning on-screen text. The computer has become an integral part to the activity system of completing the WebQuest. Artifacts carry meaning through the way they are utilized by humans in goal-directed activity. The computer has traditionally been viewed as a machine utilized by an individual for various purposes, such as word processing, accessing information on CDs or the Internet, etc. Within Instructional Technology, the computer has become part of the educational activity. In this specific context, two students are collaborating on one computer. Through participation in various activities, the socio-historical meaning of the computer changes.

The worksheet itself contained clues that would help students in solving the WebQuest activities. The introduction and task were presented in English, and were

intended as an L1 scaffold for students who were not able to engage with the task process solely through German. However, most students were not receptive to the L1 text as a resource. The majority of students either read the English sections in passing or not at all. Instead, the well-formed German sentences provided in the instructions were accessed more frequently. Students utilized them to assist with spelling, identifying the correct grammatical gender, and other writing operations. By capturing on-screen action, the research methodology employed in this study has enabled us to observe types of behaviors which otherwise would have remained obscured.

Mediational tool use during collaborative online reading tasks is complex. The various uses of L2 as a mediational tool even by relative beginners on both the intermental and intramental plane will need to be further analyzed in future studies. The role of the computer as both an obstacle and a tool, as well, as the way the activity shapes the socio-historical significance of the computer are other areas of further inquiry.

Discussion of Findings for Question 2

Strategic behaviors are defined as the specific mechanisms students employed in completing the WebQuest tasks. The students in this investigation exhibited a variety of distinct strategic behaviors, which were grouped into six categories based on the function they served during goal directed activity.

The goal of this research was not to establish a taxonomy of strategic behaviors, however. Instead, it focused on how these strategies can inform our understanding of mediation and development in L2 reading activity. Nonetheless, organizing descriptive

labels into categories facilitates the discussion of themes. Furthermore, the categories derived from these data establish the connection to the theoretical framework of SCT.

While not determined a priori, the coding scheme and categories that emerged during this investigation were informed by and related back to prior research conducted in L2 peer revision (Anton & DiCamilla, 1998) and L2 teacher education (Erben, 2001), amongst others. The discussion in the section will illustrate how the findings of this research study are congruent with others in some respects, but go beyond previous research in several regards. The coding schemes developed by the authors mentioned in this section are presented in Appendix I.

Both research studies investigated adult foreign language learning within a formal educational setting and were conducted within the framework of SCT. Language was thus viewed as a mediational tool used by pairs or groups of learners to accomplish tasks. Anton and DiCamilla (1998) focused on the L1 as a socio-cognitive tool in peer revision of adult learners of Spanish. Erben (2001) investigated Japanese immersion teacher education students in mixed groups of native and non-native speakers.

The first significant contribution made by the present study lies in the inclusion of screen recordings which provided data about written uses of the language as well as insight into other on-screen actions of reading, searching, and writing in progress. Both other studies relying only on audio data supported by finished artifacts. The analysis of such contextual resources as the dictionary, the worksheet, and the computer is also a unique addition discussed in this study.

The Socio-Procedural category identified in this research has equivalents in both studies. Anton and DiCamilla (1998) called this the “Social function: L1 and

Intersubjectivity” and included utterances targeted at creating a social and cognitive space, and at defining and limiting the task. Erben (2001) used “Constructing a Shared Referential Perspective” and “Managing Strategic Behavior” as subcategories within “Productive Collaboration,” which combine the same sort of behaviors. Managing the task seems to be one of the key functions students have to negotiate in pair and group work. As Storch (2002) points out: “in face-to-face interactions, learners negotiate not only the topic but also their relationship” (Banbrook, 1999; Clarke & Silberstein, 1988) (p. 120). Working in pairs or groups thus puts students in a situation which requires them to engage in utterances and actions that not only relate to the content, but also to the process of working with other individuals. Despite emphasizing interpersonal communication such as greeting, expressing likes and dislikes and the like, most foreign language classrooms do not equip learners with the linguistic or strategic competencies to carry out these types of negotiations in the target language. Since team work has become a defining characteristic of most work environments, learning how to enlist somebody’s cooperation, manage the pace of a process and other process oriented actions are crucial work place skills. These types of behaviors thus transcend the activity of formal education and should be explicitly taught in the language classroom.

Affective categories, constructive and destructive, are identical to those described by Erben (2001), but Anton and DiCamilla (1998) did not make mention of these types of uses of the L1. This omission is surprising, since the ratio between constructive and destructive strategic behaviors was a good indicator of the overall climate established by the various dyads. Furthermore, praising was one of the functions two dyads in this study (F/B and D/C) accomplished through the L2 via simple utterances such as *du bist klug*

(you are smart) and *gut* (good). The fact that these are the types of utterances language teachers use extensively during classroom interactions illustrates that students are very receptive to appropriating L2 language and are then able to employ very specific strategic behaviors for very specific purposes even if they are not part of the official curriculum. An additional example is that of M asking the teacher about the meaning of *also* (so), which she routinely used as a transition marker in the class.

Cognitive Strategies are those that related more closely to solving the linguistic obstacles presented by the WebQuest tasks. The reader will remember that cognitive processes are not viewed as purely individual, but as internalized processes originating on the intermental plane that have been appropriated to the intramental plane, where they still maintain their dialogic nature. Internalization is also related to the concept of regulation, as a loss of self-regulation towards a task caused the processes to manifest themselves openly again, for example, through private speech. In expert/novice interactions (for example of mothers with their children and teachers with their pupils) one of the expert's roles is to model strategies for the novice in order to enable him or her to accomplish the task individually in the future. Cognitive strategies were thus organized into those regulating the partner's, the student's own, or collective regulation. This distinction has made it possible to establish patterns of dialogic engagement as presented in Tables 21 through 25 in chapter IV.

More proficient and confident students engaged in more self-mediating strategic behaviors. These behaviors indicated a focus on one's own cognition and an inability or unwillingness to fully engage with the, generally less proficient, partner. As discussed previously, how much these types of strategies stretch the active and passive student's

Zone of Proximal Development is unclear at this time. However, there is some indication that both partners might benefit even from these self-directed utterances. Furthermore, students engaged in a large number and variety of strategic behaviors mediating their collective regulation of the L2. Through offering translations or making suggestions and negotiating them by questioning and modification, learners moved toward their potential ability rather than remaining bound by their actual proficiency level.

In this study, cognitive strategic behaviors such as explaining, providing interlanguage knowledge and examples were categorized as mediating the partner's regulation. They were more overt means that would enable the more novice learner to solve future problems in a self-directed way without the help of the expert. This category is akin to traditional scaffolding defined by Wood et al. (1976) in the following way:

1. Recruitment – enlisting the learner's interest in the task
2. Reduction in the degrees of freedom – simplifying the task
3. Direction maintenance – keeping the learner motivated and in pursuit of the goal
4. Marking critical features - highlighting certain relevant features and pointing out discrepancies between what has been produced and the ideal solution
5. Frustration control – reducing the stress and frustration during problem solving, and
6. Demonstration – modeling an idealized form of the act to be performed by completing the act or by explicating the learner's partial solution. (p. 98)

Since these characteristics were derived from observing true expert novice interactions, they differ in some respects from the category called “Mediating Partner's

Regulation”. The reader will recall that “Enlisting cooperation or help” (recruitment) was part of the socio-procedural category, as it was frequently the student less proficient in German who enlisted the partner’s help and can, therefore, not be counted as scaffolding in the narrow sense. Other strategic behaviors in this category (for example “Managing the pace of the task progression”, “Assigning tasks to oneself or the partner”) would be called “Direction Maintenance” by Woods et al. (1976). Peer interaction, even between students with different linguistic proficiencies is qualitatively different from true expert novice interactions. That is not to say, however, that peers do not engage in mutual scaffolding, however. This type of strategic behavior was called “Mediating Collective Scaffolding” and was quite evident in this study. During Language Related Episodes learners spend considerable effort on making and negotiating suggestions and translation in collective mediation. Perception of and confidence in one’s own and the partner’s knowledge had an impact on whose contributions were ultimately accepted or rejected. Since both learners were engaged in these exchanges, they might influence both their future development and performance.

While based on their linguistic proficiency some students are undoubtedly capable of providing scaffolding to a peer with the same or lower linguistic proficiency, they do not always do so. The goal of the task and their personal goals as well as group dynamics influence whether or not a more capable peer will take on the “teacher” role and engage in strategic behavior that mediate the partner’s regulation, thereby scaffolding his or her development toward future activities.

Collective scaffolding, in which both students support each other, was far more frequent, but did not always lead to what Donato (1988) called “perfect knowledge.” All

dyads expended considerable effort on socio-procedural strategies, which, in conjunction with affective strategies, framed their overall collaboration. While Donato (1988) argued that development is fostered through establishing intersubjectivity, Wells (1998) argued that it is the failure to achieve it that leads to development. This research supports Erben's (2001) findings, that it is the nature of the dialogic engagement that determined whether or not development takes place.

Discussion of Findings for Question 3

Student dyads completed three different WebQuests over the course of eight weeks. However, the overall dialogic engagement did not appear to change over time for the majority of student dyads. The ratio of constructive and destructive strategic behaviors remained similar over time for all dyads. As indicated earlier, the relative experts only rarely engaged in true scaffolding.

Superior proficiency in German did not necessarily lead these relative experts to accept their role and to scaffold the cognitive processes for the person less proficient in German. Aljaafreh and Lantolf (1994), loosely based on Wertsch (1984), and Wertsch and Hickman (1987) discuss five developmental levels from other-regulation, to partial self-regulation to self-regulation in tutoring situations.

- 1) A cognitive preparedness on the part of the novice
- 2) A readiness by the expert to transfer strategic accountability to the novice
- 3) The expert's use of reflective feedback to inform the novice of the significance of his/her linguistic or pedagogic practices

- 4) The explicitness of the expert's directives
- 5) "the possibility for the dialogic structure of interpsychological functioning to be mastered on the intrapsychological plane through the differentiation of language functions" (Erben, 2001, p. 193) adapted from Wertsch 1985, p. 166

The context of caregivers interacting with their children, or teachers/tutors instructing their students is quite different from students working together towards task completion without a specific charge to the more expert peer to teach the less capable partner. An analysis of cognitive strategic behaviors indicated that for most dyads characteristics 2, 3, and 4 were not present, and these students thus engaged in a larger number of self-directed behaviors than those directed at their partner.

As Erben (2001) indicated, the ability to provide scaffolding is less important than the quality of the dialogic engagement. Receptivity to mediational tool use, specifically, was a key factor in bringing about a move towards self-regulation. Orientation towards the task, personal compatibility, both undergirded by personal goals, were indicators among these students.

While Donato (1988) argues that collective scaffolding could lead to "perfect knowledge," the findings in this study support the more variable results found by Swain and Lapkin (1998) and Erben (2001). The nature of the tasks and the activity setting may have contributed to the lack of peer-scaffolding in the study. Students were only asked to complete the worksheet together, with no further assessment or future performance including both partners. This may have contributed to the tendency to finish the task without scaffolding by the partner, since no explicit mission was provided for this type of

behavior. Other research, for example, that of Donato (1998), observed students during planning periods for a future oral performance, found student dyads to engage in higher levels of scaffolding. Additionally, students were not trained in pair work and several students had reported previous group work experiences that resulted in individual work handed in for a group grade. The Personal History Interviews, combined with the general lack of scaffolding, indicates that students need to be presented with models for successful pair work. Students did appropriate cognitive strategies modeled by the teacher during regular class sessions, which suggests that they might respond positively to group work practice.

Theoretical Implications

In this section implications will be drawn from the findings in this study to the theoretical frameworks which have informed its design, data collection, and analysis. First, contributions to SCT will be outlined before relating findings back to Second Language Acquisition and Reading in a Second Language.

Sociocultural Theory

To the author's knowledge, Figures 44 and 46 provide the first models of collaborative L2 reading from a SCT perspective. Surveying the major publications focusing on SCT and SLA, namely the 1994 special edition of the *Modern Language Journal*, Lantolf and Appel (1998) and Lantolf (2000) located studies into planning for speaking, writing and peer revision, and communicative tasks, such as picture comparison. The only study investigating L2 reading was that by Appel and Lantolf (1998), who found speaking to be a mediational tool in L1 and L2 reading recall tasks.

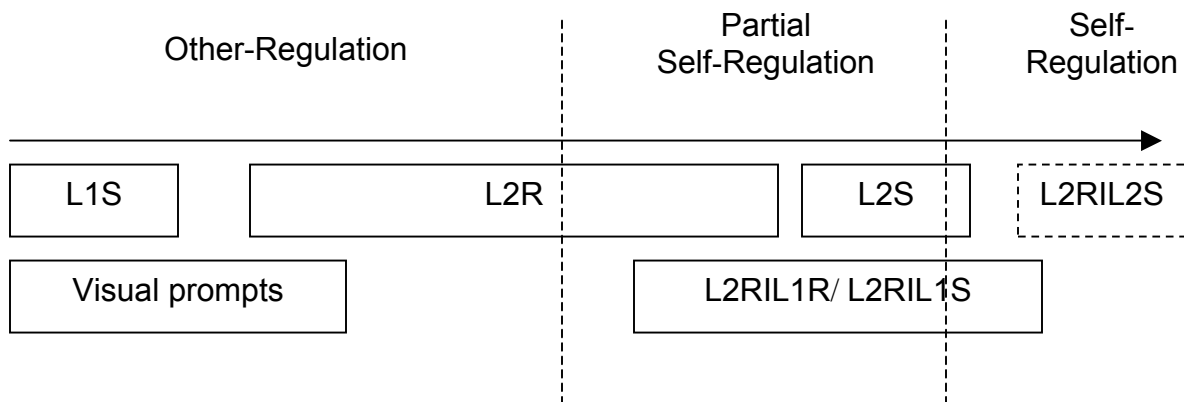
While Cole and Engeström (1993) modeled children's L1 reading acquisition, this study has incorporated psychological and physical tools to illustrate how student dyads interact with the activity setting in the college classroom. The L1 as a mediational tool has received some attention by research within SCT (Anton & DiCamilla, 1998; Wells, 1998). The research presented here found evidence of the L2 being used as a mediational tool even by beginning foreign language students.

The study presented here supports findings regarding peer scaffolding in the Zone of Proximal Development (ZPD). Peers can indeed provide collective scaffolding for each other as argued by Donato (1998) in the following way: "The microgenetic analysis of collective activity has revealed that in the process of peer scaffolding, learners can expand their own L2 knowledge and extend the linguistic development of their peers" (p. 53). Overt scaffolding was rare even in dyads with asymmetric L2 proficiencies, but student dyads co-constructed knowledge in collective scaffolding via collective dialogue and a variety of strategic behaviors. Joint activity also provided opportunities for inner speech to be verbalized as private speech, thereby, fostering development in both learners. These findings indicate that peer interactions, in addition to true or quasi expert novice interactions, are fruitful areas of research and are beneficial for L2 development.

Aljaafreh and Lantolf (1998) posit five levels of development moving from other regulation, via partial self-regulation, to self-regulation during L2 writing tutoring sessions. The research study presented here has identified various mediation tools being utilized by beginning GFL students during WebQuest tasks. Language used was not monolithic instead, students employed both languages at the same time and employed more than one of the language skills simultaneously. Figure 47 illustrates how tool use is

related to the levels of regulation outlined by Aljaafreh and Lantolf (1998). L2RIL2S (L2 Reading Internal, L2 Speaking) was not exhibited by students in this study. Nonetheless, it is identified as the ultimate goal for L2 Reading. Foreign language learners strive towards being able to read a foreign language text and discuss and evaluate it in the target language.

Figure 47. Relationship between Mediational Tool Use and Levels of Regulation



Second Language Acquisition

SLA comprises a variety of research areas. While SCT can inform a variety of these sub-fields, the findings of this specific investigation are most relevant to (a) the view of language, (b) the concept of proficiency, (c) learning strategies, (d) the role of tasks, and (e) the role of the learner. Each will be discussed in detail in what follows.

As discussed in more detail in chapter II, current mainstream approaches to SLA are based in the conduit metaphor of language, viewing language as a means to send and receive messages containing meaning. The findings presented in chapter IV provided evidence for the assertion put forth by researchers within SCT (Anton & DiCamilla,

1998; Erben, 2001; Lantolf, 2000; Storch, 2002; Wells, 1998) that acquiring a second language is more than learning to transmit messages. In addition to using language to communicate, students also acquire the use of a new mediational tool, which allows them to exert control over the physical world, other people, and their own cognitive processes. Since the L1 has been shown to be a powerful psychological tool to second language learners (Anton & DiCamilla 1998; Villamil & DeGuerrero, 1998), this process should be additive rather than suppletive. Students work towards becoming bilingual and bicultural and add to their mediational tool box rather than limiting their mediational options.

Furthermore, while the interactional perspective minimizes the role of social activity and views it merely as the trigger for individual development, SCT foregrounds the social and distributed nature of cognition. “Development does not take place within the individual prompted by negotiation of meaning, but lies in the dialogic engagement itself” (Johnson, 2004, p. 130). The interaction taking place during group work is both the process and the product of development. Communicative activities do not simply provide practice of linguistics skills for future individual performance, but it is in the social activity itself that the process towards self-regulation takes place. The findings presented in this study illustrate how the dialogic engagement and strategic behaviors expanded students’ performance within their Zone of Proximal Development.

Given the social nature of development, language performance should not be viewed as a static state of what a learner is capable of doing unassisted. Instead, what should be measured is the potential level of performance a learner is able to achieve with the help of a teacher or peer. “Interlanguage development is not only reflected in the learner’s linguistic development, but also through the kind of help that is jointly

negotiated between novice and expert” (Johnson, 2004, p. 135). Let us consider the example of students encountering an unknown phrase or word while reading. A static judgment of their reading comprehension or vocabulary knowledge might involve providing a translation equivalent or answering a specific question about the item unadulterated by any outside assistance. Let us further consider two students who are both unable to perform the aforementioned tasks. Static assessment would assume them to be at the same level of linguistic proficiency in regard to this item. However, their potential proficiency might be quite different. For one of the students, for example, a simple cognitive prompt, such as pronouncing the word, or an invitation to guess, read the context, decode a known element, or the like, might be sufficient to enable him or her to understand the word or phrase. The other student, on the other hand, does not respond to this scaffolded help and nothing short of an explicit translation into the L1 will facilitate his or her reading comprehension. It is quite apparent that these two students have different potential proficiency, while their actual proficiency is the same. In order to gain a better understanding of L2 development, language assessment should focus on measuring the Zone of Proximal Development rather than actual development. How to scaffold students’ potential ability in L2 reading presents itself as the logical next step.

In the research presented here, strategic behaviors have been identified and coded, but they are being distinguished from the strategies research conducted within a cognitive view of language acquisition. Contrary to this traditional learning strategies research, strategies are not viewed as learner characteristics located within an individual learner’s brain, but situated in joint activity. This definition is supported by Donato and McCormick’s 1994 article titled “A sociocultural perspective on language learning

strategies: The role of mediation.” Gillette (1998) additionally found that students’ goals in and orientation towards language learning overall impacted not only their use of language learning strategies, but also their effectiveness in trying to incorporate positive strategies. She concludes that her study by stating:

...cautions against the assumption that strategy training will automatically lead to better language learning and proposes that future language learning strategy research takes students’ goals and histories into account. Successful language learning depends on an individual’s willingness to make every effort to acquire an L2 rather than on superior cognitive processing alone. Viewing foreign language skills as a valuable personal goal is a crucial trait of effective language learners. Each learner’s social history is the key to goal formation, and, hence, to explaining success in second language acquisition. (p. 212)

In support of this argument, the study presented here also found that students’ orientations towards the task, their reasons for enrolling in first semester German, and their attitudes towards and experiences with collaborative learning had a more profound impact on student dyads’ dialogic engagement than prior German experience.

It follows from these observations that strategies training as proposed in mainstream SLA (Cohen, 1998; O’Malley & Chamot, 1990; Oxford, 1990) is futile if the learners are not interested in improving their own language learning. Nonetheless, learners do appropriate strategies modeled by their teachers and peers. Modeling and peer

collaboration seem more valuable than the consciousness raising and explicit instruction advocated by traditional language learning strategies studies.

Furthermore, students' strategic behaviors have to be seen within the context of the activity of formal education. The participants in this study have been immersed in this activity with all its corollaries for a number of years by the time they ever stepped foot into the German classroom. Students drew on their existing schema of "completing a worksheet with a partner during class time" within which understanding the task and providing a correct answer constitute vital components. Learning to praise, negotiate the task and the collaboration, scaffolding and mediating one's own cognitive processes is at the core of human goal directed activity. Learning to perform these functions through the L2 is a real expression of learning how to "do things with language." These skills will help them in negotiating future learning situations regardless of the specific content.

Task-Based Learning has been advocated in recent publications about foreign language pedagogy (Nunan, 1989; Skehan, 1996) as a means for the teacher to stimulate the types of behaviors that will lead to L2 development. The WebQuests utilized in the research presented here were developed based on this assumption. The teacher intended to create engaging and meaningful tasks, within an authentic framework, which required students to check weather information, go shopping, and plan a trip. Care was taken to offer opportunities for students to both practice known vocabulary and grammatical structures and interact with information just slightly above their current level of proficiency. All dyads completed the same three tasks and were "on-task" the majority of class time. Nonetheless, while the product captured via the worksheet presented similarities between dyads, the process was unique for each dyad. This confirms research

conducted by Coughlan and Duff (1998), and Swain and Lapkin (1998), which found that students benefit differently from the same tasks. Specifically, Coughlan and Duff (1998) found that the same picture description task resulted in different discourse types (narrative, description) in five different learners. Additionally, the same task performed by the same student also produced different results. The research findings presented in this study also support Johnson's (2004) conviction that, "Tasks themselves do not represent a magic bullet; the learner has the ultimate say about their usefulness" (p.178). Consequently, language teaching needs to focus more on the individual learner than on creating one-size-fits-all tasks.

It follows from the discussion above that the role of the language learner in his or her own language learning needs to be elevated. This point has also been argued by Gillette (1998), Breen (2001), and van Lier (2000). Language learners are not just individual brains processing linguistic input and producing linguistic output as the information processing model would have us believe.

Reading in a Second Language

SCT has important implications for L2 reading instruction. The findings presented in this study provide further evidence that reading development takes place and can be studied on the social plane. They further suggest that it is through mediational tool use and joint strategic behaviors that reading proficiency develops. In their much respected 1988 publication, Carrell, Devine, and Eskey state several telling observations about "Interactive approaches to second language reading" and implications for the foreign reading classroom that call into question the appropriateness of conducting research into

primarily individual cognitive processes. In a section titled “Some limitations of models in relation to teaching,” Eskey and Grabe admit:

We have no clear idea at this time of how readers in general combine bottom-up and top-down processes, much less how particular readers do so. In practice, we are therefore still very dependent on each student’s natural ability to learn, and our working goal must be to facilitate, not mechanically control, that learning. (pp. 227, 228)

These authors seem to minimize the role instruction can play in learning to read and maintain its individual nature. However, they also indicate that research into what is generally termed top-down, bottom-up or interactive cognitive processes (for more information about the history of reading research, please refer to chapter II), have not led to conclusive recommendations for reading instructions. They go on to state, “Classroom work can point the way but cannot substitute for the act itself: people learn to read by reading, not by doing exercises” (p. 228). In fairness to the authors, it needs to be pointed out that they do propose parameters of a reading classroom that fall somewhere between Krashen and Terrell’s (1983) model of free extensive reading and Troyka’s (1978) structured reading course. As explained previously, their recommendations for a successful reading classroom are as follows. Students need to be exposed to a sufficient quantity of appropriate reading materials based on students’ interests and specific needs. The teacher’s role is that of a facilitator and a resource and instructs students about reading strategies, such as SQ3R (Survey, Question, Read, Recite, Review). These recommendations put the learner in an isolated situation with texts they cannot fully access and ignore the social nature of cognitive development. While it is undoubtedly

crucial to expose students to considerable amounts of meaningful text in order to learn how to read, the teacher and other students need to take greater part in the reading process.

In her influential 1991 work, Bernhardt's recommendations for curriculum and instruction focus primarily on the selection of materials. She argues for authentic materials which are recycled throughout the curriculum. In addition, she calls for purposeful reading. In terms for reading instruction she argues:

...reading instruction should not be "controlled" in the conventional sense of designing and carrying out lessons. Teachers need to learn to take on a facilitative not a directive role in the initial phases of reading instruction and a directive role in later stages of reading instruction. Teachers need to see reading not as one of the "four skills", but rather as a form of cultural explorations. (p. 228)

While it is certainly true that due to their socio-historical context, foreign language texts provide students the opportunity and the challenge to access a new world, the process of learning to read itself is still viewed as an ultimately individual process by all researchers listed so far. SCT would argue that without active participation in social activity, it is doubtful that all students will learn to engage in successful and efficient foreign language reading. The reader might have noticed that the quoted work was published in the late 1980s and early 1990s. It should be noted that the current state of reading instruction is still grounded in these seminal works. For example, Alice Omaggio Hadley (2001), in her popular work *Teaching language in context*, suggests the use of authentic materials, "designing tasks that correspond to all of these processes in reading"

(p. 205). The processes she refers to are skimming, scanning, extensive, and intensive reading, which are generally conducted by students in individual rather than joint activity.

In summary, interactive approaches to reading focus on interaction between bottom-up and top-down processes. While Bernhardt's (1991) socio cognitive model adds a focus on the interaction between social and individual factors, the reading process is still seen as taking place via individual cognitive processes. SCT, on the other hand, argues that all learning is first and foremost social before individuals are capable of carrying out certain tasks individually. From this perspective, it seems unreasonable to expect learners to develop reading proficiency without engaging in social activity. The study presented here found support for seeing L2 reading as a social activity. Students were able to interact with texts that contained a number of unknown lexical items in large part successfully through dialogic engagement with a peer. As discussed previously, several students would probably not have been able to access the texts in a meaningful way if it had been assigned as homework or as an individual in-class task. However, during joint activity they benefited from the presence of the partner in a variety of ways – as co-structor, mentor, and sounding board. In order to learn how to read, students need to read, but a good portion of this reading, especially during early reading development, should take place in the classroom in collaborative settings. Kern (2000) also argues for incorporating reading and literacy into class time rather than expecting students to engage with texts without guidance. "In sum, the problem with the traditional sequence of instruction is that students get little direct help with what they typically report to be the most difficult parts of language study—reading and writing " (p. 131).

As illustrated in Figures 44 and 46, texts are socio-historical artifacts as are the other physical tools used during the reading activity. In adult second language reading development, learners have access to a fully developed mediational system mediated via their L1. Rather than trying to replace one mediational tool system with another, the process should be seen as additive. While students in this investigation engaged in such “bottom-up” practices as decoding and such “top-down” practices as guessing the meaning from context, these strategic behaviors were carried out in collective scaffolding rather than in individual cognition. Peer collaborative reading provides opportunities for verbalizing thought processes that have the potential to improve both students’ reading development. However, these types of strategic behaviors need to be modeled to the students by their classroom teacher, either in reading conferences or through structured classroom activities. This study has provided some insights into new directions in L2 reading research. It has shown that mediational tool use and strategic behaviors can start to explain how students develop self-regulation towards reading in a foreign language.

Asking student to read Internet texts alters the reading process. Not only was the text presented on a computer monitor, but each student dyad accessed a different part of the “text,” or took a different path to retrieving information. This research also noted that students engaged with the Internet text differently from the way they engaged with the worksheet. Compared to comprehending the worksheet and answering the number of LREs observed during searching the Web were low. While this study has operated within a certain definition of Language Related Episodes, future studies need to investigate in more detail how students navigate Websites for different purposes. In this context, the student who was in control of the computer generally took on the role of the guide and

engaged in more highly individual search behavior. This pattern was only broken if the partner actively interjected suggestions or questions. Once a piece of information had been found, both partners were generally involved in evaluating its usefulness to answering the questions posed on the worksheet. The majority of students relied heavily on visual information and quickly moved on if the information did not seem relevant “at first glance.” Some students, however, spent considerable time on certain pages which impeded their ultimate task completion. The vastness of the Internet seemed to create different reading patterns from the relative concreteness of the WebQuest worksheet. While the Internet has largely been heralded as the source for authentic materials, the concept of authenticity exists only within the constraints of the activity within which it occurs. In the activity of formal education, the worksheet was arguably the more authentic and meaningful text.

Investigating L2 reading from a SCT perspective has just barely begun. Nonetheless, it is already becoming apparent that reading needs to be investigated as a social rather than an individual phenomenon. Furthermore, top-down, bottom-up processes do not provide an explanatory framework for the development of reading comprehension and instruction. The discussion will now turn to methodological implications.

Methodological Implications

Screen capture recording has proven to be an efficient way to unobtrusively collect data from students working collaboratively on computers. Because the software can be installed on standard computers in a lab environment without additional hardware,

it lends itself to classroom based research studies in addition to those in more controlled environments. In this study, verbal data were collected via one USB microphone per dyad located next to the keyboard. This set-up was cost and time effective however, not all students' voices were picked up equally well depending on their location in relationship to the microphone. Some students also moved the microphone which caused interference with sound quality. A possible way to improve sound quality would be to utilize a lapel microphone for each student and feed the data into the same computer. This, however, might make students more aware of and uneasy about the research process. The same case can be made for video recording the students to observe facial expressions, gestures, and to ascertain who is in control of the computer at any given time. Again, the quality of the data would be improved in one respect, but the set-up would be increasingly difficult and intrusive.

The data collection method described above seems, thus, appropriate not only for future investigation into collaborative and individual reading, but also in other fields. In writing research, for example, observing each keystroke makes it possible to study the writing and editing process in more detail. Another area of applicability is that of usability studies, where this method can be employed to record human-computer interactions in detail as they occur naturally. While hypertext studies have drawn on data collected through reporting clicks, special programming had to be employed to collect this information making it virtually impossible to use authentic materials not specifically created for research. Cursor movements and keystrokes were also not recorded. The addition of audio data adds an even more important layer to the data. The advent of full

motion and sound screen recording software has made it possible to use existing materials and to observe cursor movements, keystrokes and audio data.

The data presented in chapter IV are proof of the complex nature of the study of second language acquisition. The unique patterns of mediational tool use, strategic behaviors and dialogic engagement were not accessible through overall tallying procedures. The intricate nature of collaborative work speaks to the appropriateness of using case study designs in Second Language Acquisition research. Furthermore, in echoing other research in SCT, this investigation has shown that examining dyads of students engaged in joint problem solving provided insight into the L2 acquisition process. In addition to providing information about how students mediate each other's regulation, the presence of the partner also seemed to bring to the surface verbalizations of self-mediating strategies.

Activity Theory provides a useful research framework with the levels of Activity, Action, and Operation. Formal education as an activity system can be studied as one authentic setting for foreign language learning however, at some point, the implications for other types of activities, such as work, need to be integrated into research studies. Student goals need to be taken into account in investigations of learning and development. Better instruments need to be developed to get at student overall goals and to observe goal formation and changes in goals during different actions. How specific operations influence the goals and vice versa needs to be traced. In addition, the connection between tasks and goals and whether or not goals can be changed through the interaction between the teacher, the student and his or her peers will be fruitful areas for future research.

Practical Implications

Implications for the L2 reading classroom have already been touched upon in the previous section. This section will revisit these briefly and focus on more general implications for foreign language teaching and learning.

The use of the L1 as a mediational tool should be valued in a foreign language classroom, but a shift to using the L2 needs to be fostered through modeling and joint problem solving. Reading should not be viewed and taught as an individual skill. It is only through appropriating strategic behaviors encountered on the social plane that learners develop self-regulation over intramental cognitive processes. Rather than assigning reading as homework assignments, students need to engage in collaborative reading during class (see also Kern, 2000) with their teacher acting as the more knowledgeable expert scaffolding the process. This process, in time, will allow peers, even in the beginning stage of foreign language learning, to more effectively scaffold each other.

Language teachers should be concerned with their students' potential performances rather than current level of ability. Teachers need to be involved in the learning process, not as drill masters, but as experts modeling higher levels of performance and cognitive regulation. Learners' potential ability should be targeted through the purposeful and gradual reduction of scaffolded help provided by the teacher, mediational artifacts and their peers. Students should be enabled to learn in their zone of proximal development through engaging in collective scaffolding.

Self-selection seems to be an appropriate way to organize pair and group work, especially if the tasks require extended periods of time. If students are provided with

opportunities to become acquainted with a variety of students in their course, they seem able to make an informed decision about choosing a partner whose goals are compatibility with their own during group work. In addition, collaborative groups of students with similar proficiency levels might be more beneficial, unless the more advanced peer is willing to engage in scaffolding. In this case, each person needs to be held accountable for certain task elements, while a common grade is assigned to the joint performance.

Finally, students need to be viewed as active participants in their learning process. Texts should be selected based on students' goals and interest. Students' personal histories, socio-historical meanings of texts, and critical literacies all need to be incorporated into the foreign language classroom.

Directions for Future Research

As indicated in the foregoing discussion, the wealth of data collected during this investigation offers a variety of research avenues. The role the teacher in collaborative learning needs to be further analyzed. Certain student dyads engaged with the teacher more frequently than others. The transcripts revealed that the teacher, when asked, responded in a variety of ways. The type of feedback and scaffolding provided by the instructor should be analyzed in future research.

The five levels of transitioning from other to self-regulation identified by Aljafreeh and Lantolf (1994, p. 470) during writing tutoring need to be adapted to L2 reading. The same is true for their regulatory scale of scaffolded help, introduced in the same article (p. 471). This could be accomplished by examining reading tutoring sessions

or by assigning tasks for which a successful completion entailed improving both students' individual performance.

The paucity of scaffolding exhibited by the students and the lack of significant change over time indicates a need to model strategic behaviors. Future research might involve training sessions during which each student receives scaffolded help by the teacher before students start working together. This would allow us to ascertain whether this provides the necessary operational as well as linguistic strategies to the students. However, the social origin and nature of strategic behaviors need to be maintained and the training sessions themselves need to be studied as well in order to identify development towards self-regulation.

In order to make the data more manageable, it would be advisable to use shorter tasks, which could be analyzed in more detail before conducting stimulated recall interviews. In addition, joint problem solving tasks should be followed by individual assessments as a mechanism to trace development towards self-regulation.

While the data collection for this investigation spanned eight weeks, it would be beneficial to conduct more extended longitudinal case studies to witness the emergence of higher forms of L2 mediational tool use, such as L2RL2S. Mixed method designs, combining qualitative and quantitative means of data analysis, will be useful in determining L2 development and group differences.

Other languages and age groups also need to be included to indicate similarities and differences. Dialogic engagement between symmetric dyads (beginner/beginner; advanced/advanced) should be compared in more detail to that of asymmetric dyads. There may be a minimal level of proficiency asymmetry underneath which true mediation

of the partner's L2 tool use does not occur. Additionally, investigations need to be conducted with students in intermediate and advanced language courses both at the K-12 and the university level.

Conclusion

This investigation has focused on three research questions, but many more intriguing questions have arisen. The richness of the data has already laid the groundwork for future investigations into the significance of specific strategic behaviors, and the role of the teacher, among others.

This research has provided a glimpse into the complex processes of a number of adult foreign language learners engaged in collaborative online reading. While no two learners and classrooms are identical, it is possible to recognize our students or ourselves in the descriptions of others. Hopefully, these findings will lead to an extended dialogue about the L2 as a mediational tool, the nature of peer collaboration, and ultimately L2 development.

References

- Afflerbach, P., & Johnston, P. (1984). Research methodology: On the use of verbal reports in reading research. *Journal of Reading Behaviour*, 16, 307-322.
- Afflerbach, P. (2000). Verbal report and protocol analysis. In M., Kamil, P. Mosenthal, P. Pearson, & R. Barr (Eds.), *Handbook of reading research: Vol.3.* (pp.163-179). Mahwah: Lawrence Erlbaum Associates.
- Ahmed, M. (1998). Speaking as cognitive regulation: A Vygotskian perspective on dialogic communication. In J.P Lantolf, & G. Appel (Eds.), *Vygotskian approaches to second language research* (pp. 157-173). Norwood, NJ: Ablex Publishing Corporation.
- Alderson, J. C. (1984). Reading in a foreign language: a reading problem or a language problem? In J.C. Alderson and A. H. Urquardt (Eds.), *Reading in a foreign language* London: Longman.
- Alderson. J. C. (2000). *Assessing Reading*. Cambridge: Cambridge University Press.
- Anton, M., & DiCamilla, F. (1998). Socio-cognitive functions of L1 collaborative interaction in the L2 classroom. *The Canadian Modern Language Review*, 54, 314-342.
- Appel, G., & Lantolf, J.P. (1994). Speaking as mediation: a study of L1 and L2 text recall tasks. *Modern Language Journal*, 78, 437-452.
- Bartlett, F. C. (1932). *Remembering: A study of experimental and social psychology*. Cambridge: Cambridge University Press.
- Beauvois, M.H., (1998) Write to speak: The effects of electronic communication on the oral achievement of fourth semester French students. In Muyskens, J. (Ed.), *New Ways of Learning and Teaching: Focus on Technology and Foreign Language Education* (pp. 93-116). Boston: Heinle & Heinle Publishers.
- Bernhardt, E.B (1991). *Reading development in a second language: Theoretical, empirical, & classroom perspectives*. New Jersey: Ablex Publishing Corporation.
- Breen, M. (Ed.). (2001). *Learner contributions to language learning: New directions in research*. Harlow: Pearson Education.
- Carrell, P. (1983). Three components of background knowledge in reading comprehension. *Language Learning*, 33, 2, 183-207.

- Carrell, P. (1988a). Introduction: Interactive approaches to second language reading. In P. Carrell, J. Devine, & D. Eskey (Eds.) *Interactive approaches to second language reading* (pp. 1-7). Cambridge: Cambridge University Press.
- Carrell, P., (1988b). Interactive text processing: Implications for ESL/second language reading classrooms. In P. Carrell, J. Devine, & D. Eskey (Eds.) *Interactive approaches to second language reading* (pp. 239-259). Cambridge: Cambridge University Press.
- Carrell, P., & Eisterhold, J. (1988). Schema theory and ESL reading pedagogy. In P. Carrell, J. Devine, & D. Eskey (Eds.) *Interactive approaches to second language reading* (pp. 37-55). Cambridge: Cambridge University Press.
- Cato, V., English, F., & Trushell, J. (1989). Reading screens: Mapping the Labyrinth. *Reading, 13*, 3, 168-178.
- Cowan, J.R. (1976). Reading, perceptual strategies and contrastive analysis. *Language Learning, 26*, 1, 95-109.
- Chiou, G.-F. (1995). Reader interface of computer-based reading environment. *Interactional Journal of Instructional Media, 22*, 2, 121-133.
- Chun, D. M., (1994). Using computer networking to facilitate the acquisition of interactive competence. *System, 22*, 1, 17-31.
- Chun, D., & Plass, J. (1996). Facilitating reading comprehension with multimedia. *System, 24*, 503-519.
- Chun, D., & Plass, J. (1997). Research on text comprehension in multimedia environments. *Language Learning & Technology, 1*, 60-81.
- Clausing, C. S. & Schmitt, D. R. (1990). Does computer screen color affect reading rate? ERIC database, 20.
- Clay, M. & Cazden, C (1990). A Vygotskaia interpretation of reading recovery. In L. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 206-222). Cambridge: Cambridge University Press.
- Cohen, A. (1998). *Strategies in learning and using a second language*. New York: Addison Wesley Longman Limited.
- Cole, M., & Engeström, Y. (1993). A cultural-historical approach to distributed cognition. In G. Salomon (Ed), *Distributed cognitions: Psychological and educational consideration* (pp. 1– 46). Cambridge. Cambridge University Press.

- Coughlan, P. & Duff, P. (1994), Same task, different activities: Analysis of a SLA task from an activity theory perspective. In J.P. Lantolf, & G. Appel (Eds.), *Vygotskian approaches to second language research* (pp. 173-194). Norwood: Ablex.,
- Cohen, A.D. & Aphek, E. (1980). Retention of second language vocabulary over time: investigating the role of mnemonic associations. *System*, 8, 221-235.
- Davis, J.N., & Lyman-Hager, M.A. (1997). Computers and L2 reading: Student performance, student attitude. *Foreign Language Annals*, 30, 1, 68-72.
- DeRidder, I. (2000). Are we conditioned to follow links? Highlights in CALL materials and their impact on the reading process. *Computer Assisted Language Learning*, 13, 183-195.
- DeRidder, I. (2002). Visible or invisible links: Does the highlighting of hyperlinks affect incidental vocabulary learning, text comprehension, and the reading process? *Language Learning & Technology*, 6, 123-146.
- DiCamilla, F., & Anton, M. (1997). Repetition in the collaborative discourse of L2 learners: a Vygotskian perspective. *Canadian Modern Language Review*, 53, 609-33
- Dodge, B. (1997). Some thoughts about WebQuests.
http://edweb.sdsu.edu/courses/edtec596/about_webquests.html (11 November 2002).
- Donato, R. (1988). Beyond group: A psycholinguistic rationale for collective activity in second language learning. Doctoral dissertation. University of Delaware.
- Donato, R. (1998). Collective scaffolding in second language learning. In J. P. Lantolf, & G. Appel (Eds.), *Vygotskian approaches to second language research* (pp. 33-56). Norwood, NJ: Ablex Publishing Corporation.
- Donato, R., & D. McCormick. (1994). A sociocultural perspective on language learning strategies: the role of mediation. *The Modern Language Journal*, 78, 453-464.
- Dudfield, A. (1998). Cyberliteracies: Implications for education. *On-CALL*, 12, 25-34.
- Dunn, W. E., & Lantolf, J.P. (1998). Vygotsky's zone of proximal development and Krashen's i+1: incommensurable constructs; incommensurable theories. *Language Learning*, 48, 411-442.

- Eisner, E. (1998). *The enlightened eye: Qualitative inquiry and the enhancement of educational practice*. Upper Saddle River, NJ: Prentice-Hall.
- Ellis, R. (1994). *The study of second language acquisition*. Oxford: Oxford University Press.
- Erben, T. (2001) *Student-teachers' use of microteaching activity to construct sociolinguistic knowledge within a Japanese immersion initial teacher education program in Australia*. Unpublished Ph.D. Dissertation. Lancaster University.
- Ericsson, K. A. & Simon, H. A. (1993). *Protocol analysis: verbal reports as data*. Cambridge: MIT Press.
- Eskey, D., & Grabe, W. (1988). Interactive models for second language reading: perspectives on instruction. In P. Carrell, J. Devine, & D. Eskey (Eds.), *Interactive approaches to second language reading* (pp.223-238). Cambridge: Cambridge University Press.
- Færch, C. & Kasper, G. (1987). From product to process: Introspective methods in second language research. In C. Færch & G. Kasper (Eds.), *Introspective methods in second language research* (pp. 5 – 23). Clevedon, England and Philadelphia: Multilingual Matters Ltd.
- Flaitz, J., & Feyten, C. (1997). A two-phase study involving consciousness raising and strategy use for foreign language learners. In Oxford, R. (Ed.), *Language learning strategies around the world: Cross-cultural perspectives* (pp. 211-225). Manoa: University of Hawaii Press
- Foltz, P. (1996). Comprehension, coherence and strategies in hypertext and linear text. In J-F. Rouet, J. Levonen, A. Dillon, & R. Spiro(Eds), *Hypertext and cognition* (pp. 109-136). Mahwah: Lawrence Erlbaum Associates.
- Freese, A. R. (1997). Reading rate and comprehension: Implications for designing computer technology to facilitate reading comprehension. *Computer Assisted Language Learning*, 10, 5, 455-478.
- Gall, M., Borg, W., & Gall, J. (1996). *Educational research: An introduction* (6th Edition). White Plains: Longman Publishers.
- Gallimore, R., & Tharp, R. (1990). Teaching mind in society: Teaching, schooling, and literate discourse. In Moll, L. (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 175-205). Cambridge: Cambridge University Press.

- Ganderton, R. (1999). Interactivity in L2 Web-Based Reading. In R. Debski & M. Levy (Eds.), *World CALL: Global perspectives on computer-assisted language learning* (pp.49-66). Lisse, The Netherlands: Swets and Zeitlinger Publications.
- Gass, S., & Mackey, A. (2000). *Stimulated recall methodology in second language research*. Mahwah: Lawrence Erlbaum Associates.
- Gillham, B. (2000). *Case Study Research Methods*. London: Continuum.
- Godwin-Jones, R. (1998). Language interactive: Language teaching and the Web. URL <http://www.fln.vcu.edu/cgi/1.html> (11 November 2002)
- Godwin-Jones (2000) Emerging technologies: Web browser trends and technologies. *Language Learning & Technology*, 4, 1, 6-11.
- Goodman, Y, & Goodman, K (1990). Vygotsky in a whole-language perspective. In L. Moll, (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 223-250). Cambridge: Cambridge University Press.
- Goss, N., Zhang, Y., & Lantolf, J. (1994). Two heads may be better than one: Mental activity in second-language grammaticality judgments. In E. Tarone, S. Gass, & A. Cohen (Eds.), *Research methodology in Second-Language Acquisition* (pp. 263-286). Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Grabe, W., & Kaplan, R. B. (1996). *Theory and practice of writing*. London: Longman.
- Haarstrup, K. (1987). Using thinking aloud and retrospection to uncover learners' lexical inferencing procedures. In C. Færch & G. Kasper (Eds.), *Introspective methods in second language research* (pp. 197 – 212). Clevedon, England and Philadelphia: Multilingual Matters Ltd.
- Hoffman, S. (1998). *The effect of a hypertext environment on the reading comprehension of second language learners in an intermediate-level college German course*. Unpublished Doctoral Dissertation. University of South Alabama.
- Hosenfeld, C. (1977). A preliminary investigation of reading strategies of successful and unsuccessful second language readers. *System*, 5, 110-123.
- Hoven, D. (1997). *Improving the management of flow of control in computer-assisted listening comprehension tasks for second and foreign language learners*. Unpublished doctoral dissertation, University of Queensland.
- Huang, X., & M. Van Naersson (1985). Learning strategies of oral communication. *Applied Linguistics*, 6, 287-307.

- Hudson, T. (1982). The effects of inducing schemata on the “short circuit” in L2 reading: Non decoding factors in L2 reading performance. *Language Learning*, 32, 1, 1-31.
- Johnson, M. (2004). *A philosophy of second language acquisition*. New Haven: Yale University Press.
- Johnstone, B. (Ed.) (1994). *Repetition in discourse: Interdisciplinary perspectives*. Norwood: Ablex Publishing Corporation.
- Kaplan, R.B. (1966). Cultural thought patters in intercultural education. *Language Learning*, 16, 1-20.
- Kern, R.G. (1995). Restructuring classroom interaction with networked computers: Effects on quantity and characteristics of language production. *Modern Language Journal*, 79, 457-476.
- Kern, R. (2000). *Literacy and language teaching*. Oxford: Oxford University Press.
- Khaldieh, S. (2000). Learning strategies and writing processes of proficient vs. less-proficient learners of Arabic. *Foreign Language Annals*, 33, 522-534.
- King, L. (2000). Teaching German literature through the Web: Processes and outcomes. *Unterrichtspraxis*, 33, 62-70.
- Krashen, S., & Terrell, T. (1983). *The natural approach*. Hayward: Alemany.
- Krashen, S. (1985). *The input hypothesis: Issues and implementations*. London: Lognman.
- Lantolf, J.P. (Ed.) (1994). Sociocultural Theory and Second Language Learning (Special Issue). *Modern Language Journal*, 78, 4.
- Lantolf, J.P., & Appel, G. (1998). Theoretical framework: An introduction to Vygotskian approaches to second language research In J. P. Lantolf, & G. Appel (Eds.), *Vygotskian approaches to second language research* (pp. 1-32). Norwood, NJ: Ablex Publishing Corporation.
- Lantolf, J.P. (with Pavlenko, A.) (1995). Sociocultural Theory and Second Language Acquisition. *Annual Review of Applied Linguistics*, 15, 108-124.
- Lantolf, J.P., & Pavlenko, A. (2001). (S)econd (L)anguage (A)ctivity theory: understanding second language learners as people. In M. Breen (Ed.), *Learner*

- contributions to language learning: New directions in research* (pp. 141-158). Harlow: Pearson Education Limited.
- Lee, J. F. (1997). Non-native reading research and theory. In K. Bardovi-Harlig, & B. Hartford (Eds.), *Beyond methods: Components of language teacher education* (pp. 152-171). New York: McGraw Hill.
- Leontiev, A. (1981). The problem of activity in psychology. In J.V. Wertsch, (Ed). *The concept of activity in Soviet psychology* (pp. 37-71). Armonk: M.E. Sharpe.
- Lincoln, Y., & Guba E. (1985). *Naturalistic inquiry*. Newbury Park: SAGE Publication, Inc.
- Lomicka, L. (1998). "To gloss or not to gloss": An investigation of reading comprehension online. *Language Learning & Technology*, 1, 2, 41-50. Retrieved April 15, 2004 from <http://llt.msu.edu/vol1num2/article2/default.html>
- Long, M. (1983). Native speaker/non-native speaker conversation and the negotiation of comprehensible input. *Applied Linguistics*, 4, 126-41.
- McKeague, C.A. (1996). *Effects of hypertext structure and reading activity on novices' learning from text*. Unpublished Doctoral Dissertation. The Pennsylvania State University.
- McNeil, J.D. (1984). *Reading comprehension: New directions for classroom practice*. Glenview, IL: Scott Foresman.
- Miles, M., & Huberman, A. (1994). *Qualitative data analysis* (2nd Edition). Newbury Park: SAGE Publication, Inc.
- Mitchell, R., & Myles, F. (1998). *Second language learning theories*. New York; Oxford University Press.
- Moll, L., & Greenberg, J. (1990). Creating zones of possibilities: Combining social contexts for instruction. In L. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 319-348). Cambridge: Cambridge University Press.
- Nagata, N. (1999). The effectiveness of computer-assisted interactive glosses. *Foreign Language Annals*, 32, 4, 469-479.
- Naiman N., Fröhlich, M., Stern, H., & Todesco, A. (1978). *The good language learner. Research in education Series no7*. Toronto: The Ontario Institute for Studies in Education.

- Nielsen, J. (1995). *Multimedia and Hypertext: The Internet and Beyond*. San Francisco: Morgan Kaufmann (originally published by AP Professional, Boston, MA).
- Nunan, D. (1989). *Designing tasks for the communicative classroom*. Cambridge: Cambridge University Press.
- Ohta, A.S. (2000). Rethinking interaction in SLA: Developmentally appropriate assistance in the zone of proximal development and the acquisition of L2 grammar. In J.P. Lantolf (Ed.), *Sociocultural Theory and Second Language Learning* (pp. 155-177). Oxford: Oxford University Press.
- O'Malley, J. & Chamot, A. (1990). *Learning strategies in second language acquisition*. Cambridge: Cambridge University Press.
- O'Malley, J., Chamot, A., Stewer-Manzanares, G., Russo, R., & Küpper, L. (1985). Learning strategy applications with students of English as a second language. *TESOL Quarterly*, 19, 3, 557-584.
- Oxford, R. (1990). *Language learning strategies: What every teacher should know*. New York: Newbury House/Harper & Row.
- Oxford, R. (1997). Cooperative learning, collaborative learning, and interaction: Three communicative strands in the language classroom. *The Modern Language Journal*, 81, 443-56.
- Piaget, J. (1952). *The origin of intelligence in children*. New York: International University Press.
- Pica, T. (1987). Second language acquisition, social interaction in the classroom. *Applied Linguistics*, 7, 1-25.
- Pica, T. (1991). Classroom interaction, participation and comprehension: redefining relationships. *System*, 19, 437-52.
- Plass, J.L. (1998). Design and evaluation of the user interface of foreign language multimedia software: A cognitive approach. *Language Learning and Technology*, 2, 35-45.
- Rouet, J-F., Levonen, J, Dillon, A, & Spiro, R. (1996). An introduction to hypertext and cognition. In J-F. Rouet, J. Levonen, A. Dillon, & R. Spiro (Eds.), *Hypertext and cognition* (pp. 3-8). Mahwah: Lawrence Erlbaum Associates.
- Rouet, J-F. & Levonen, J. (1996). Studying and learning with hypertext: Empirical studies and their implications. In J-F. Rouet, J. Levonen, A. Dillon, & R. Spiro.

- (Eds.), *Hypertext and cognition* (pp. 9-24). Mahwah: Lawrence Erlbaum Associates.
- Rubin, J. (1981). Study of cognitive processes in second language learning. *Applied Linguistics*, 11, 117-31.
- Rummelhart, D. E. (1980). Schemata: The building blocks of cognition. In R.J. Spiro, B. C. Bruce & W. F. Brewer (Eds.), *Theoretical issues in reading comprehension* (pp.33-58). Hillsdale, NJ: Erlbaum.
- Salomon, G. (1993). No distribution without individuals' cognition: a dynamic interactional view. In G. Salomon (Ed.), *Distributed cognitions: Psychological and educational consideration* (pp. 111 – 138). Cambridge. Cambridge University Press.
- Schiffrin, J.M. (1994). *Approaches to discourse*. Cambridge, Mass: Blackwell.
- Seliger, H., & Shohamy, E. (1989). *Second language research methods*. Oxford: Oxford University Press.
- Shrum, J.L., & Glisan, E.W. (2000). Teacher's handbook: Contextualized language instruction (2nd Edition). Boston: Heinle.
- Skehan, P. (1996). A framework for the implementation of task-based instruction. *Applied Linguistics*, 17, 38-62.
- Smagorinsky, P. (1995). The social construction of data: Methodological problems of investigating learning in the zone of proximal development. *Review of Education Research*, 65, 3, 191-212.
- Smagorinsky, P. (1998). Reading as mediated and mediating action: Composing meaning for literature through multimedia interpretive texts. *Reading Research Quarterly*, 33, 198-226.
- Smagorinsky, P. (2001). If meaning is constructed, what is it made from? Toward a cultural theory of reading. *Review of Educational Research*, 71, 133-69.
- Smagorinsky, P., & O'Donnell-Allen, C. (2000). Ideocultural diversity in small groups: The role of the relational framework in collaborative learning. In C.D. Lee, & P. Smagorinsky (Eds.), *Vygotskian perspectives on literacy research*. Cambridge: Cambridge University Press.
- Spivey, N. (1997). *The constructivist metaphor: Reading, writing and the making of meaning*. San Diego: Academic Press.

- Steffensen, M.. (1988). Changes in cohesion in the recall of native and foreign texts. In P. Carrell, J. Devine, & D. Eskey (Eds.), *Interactive approaches to second language reading* (pp.140-151). Cambridge: Cambridge University Press.
- Storch, N. (2002). Patterns of interaction in ESL pair work. *Language Learning*, 52, 119-158.
- Strauss, A., & Corbin, J (1998). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. Thousand Oaks: Sage Publications.
- Swain, M. (1995). Three functions of output in second language learning. In G. Cook & B. Seidlhofer (Eds.), *Principle and practice in applied linguistics: Studies in honour of H. G. Widdowson* (pp. 125-144). Cambridge: Cambridge University Press.
- Swain, M. & Lapkin, S. (1998). Interaction and second language learning: Two adolescent French immersion students working together. *The Modern Language Journal*, 82, 320-337.
- Swain, M. (2000) The output hypothesis and beyond: Mediating acquisition through collaborative dialogue. In J.P. Lantolf (Ed.), *Sociocultural Theory and second language learning* (pp. 97-114). Oxford: Oxford University Press.
- Terrell, T., Tschirner, E., & Nikolai, B. (2000). *Kontakte: A communicative approach* (4th Edition). New York: Mc-Graw Hill.
- Troyka, L. (1978). *Structured reading*. Englewood Cliffs: Prentice-Hall.
- Urquardt, S., & Weir, C. (1998). *Reading in a second language: Process, product, and practice*. New York: Addison Wesley Longman Limited.
- van Lier, L (2000). From input to affordance: Social-interactive learning from an ecological perspective. In J.P. Lantolf (Ed.), *Sociocultural Theory and second language learning* (pp. 245-260). Oxford: Oxford University Press.
- Vygotsky, L.S. (1962). *Thought and language*. Cambridge: MIT Press.
- Vygotsky, L.S. (1978). *Mind in society: The development of higher mental functions*. Cambridge: Harvard University Press.
- Vygotsky, L.S. (1981). The genesis of higher mental functions. In Wertsch, J.V. (Ed.), *The concept of activity in Soviet psychology* (pp. 144-188). Armonk: NY Sharpe.
- Walz, J. (2001a). Reading hypertext: lower-level processes. *Canadian Modern Language Review*, 57, 475-94.

- Walz, J. (2001b). Reading hypertext: higher-level processes. *Canadian Modern Language Review*, 57, 590-606.
- Warschauer, M. (1997). Computer-mediated collaborative learning: theory and practice. *The Modern Language Journal*, 81, 470-81
- The WebQuest Page. <http://webquest.sdsu.edu/> (11 November 2002)
- Wells, G. (1998). Using L1 to master L2: A response to Anton and di Camilla's 'Socio-cognitive functions of L1 collaborative interaction in the L2 classroom'. *Canadian Modern Language Review*, 54, 3, 343-353.
- Wertsch, J.V. (1984). The zone of proximal development: Some conceptual issues. In B. Rogoff & J.V. Wertsch (Eds.), *Children's learning in the zone of proximal development*. San Francisco: Jossey-Bass Publications.
- Wertsch, J.V. (1985). *Vygotsky and the social formation of mind*. Harvard: Harvard University Press.
- Wertsch, J.V. (1991). *Voices of the mind: A sociocultural approach to mediated action*. Cambridge, MA: Harvard University Press.
- Wertsch, J. V., & Stone, C. A. (1985). The concept of internalization in Vygotsky's account of the genesis of higher mental functions. In J. V. Wertsch (Ed.), *Culture, communication, and cognition: Vygotskian perspectives* (pp. 162-179). New York: Cambridge University Press.
- Wertsch, J. V., & Hickmann, M. (1987). Problem solving in social interaction: A microgenetic analysis. In Hickmann (Ed.), *Social and functional approaches to language and thought*. Orlando: Academic Press.
- Zamel, V. (1983). The composing processes of advanced ESL students: six case studies. *TESOL Quarterly*, 17, 2, 165-187.

Appendices

Appendix A: Course Syllabus

GER1120 Sec. 001: Beginning German 1

University of South Florida
College of Arts and Sciences
Department of World Languages
Montag, Dienstag, Mittwoch, Donnerstag 9:00a.m.-9:50a.m.
HMS 212
Spring Semester 2002

Instructor: Frau Sabine Siekmann	E-mail: siekmann@mail.usf.edu
Büro : EDU147 A	Telefon: 974-7853
Sprechstunde: Montag und Dienstag 8:00 – 9:00 oder nach Vereinbarung	

Texts:

Kontakte. Fourth Edition. Terrell, Tschirner, and Nikolai. Boston: McGraw Hill, 2000
The packet includes the textbook and a workbook.

Publisher Web Site: www.nhhe.com/kontakte

Blackboard: <https://my.usf.edu>

Computer and Internet Use: In order to participate fully in this course, students will be required to use computers and the Internet for certain assignments. Some lab and homework assignments will be completed within Blackboard. An introduction to using Blackboard for this class will be conducted during the first week of classes.

Computer Access: is available in the language computer lab in CPR 119, as well as in any of the open use labs on campus.

Disabilities: If, to participate in this course, you require an accommodation due to a physical or learning impairment, you must contact the Office of Services to Students with Disabilities. The office is located in the Student Services Bldg., SVC 208. You may also reach the office by phone, (813) 253-7031, TDD (813) 253-7053, or (813) 253-7336.

Objectives: Development of basic skills in listening and reading comprehension and low level proficiency of speaking and writing abilities in modern German. Awareness of the culture(s) of different German speaking countries.

Students enrolled in this class also need to sign up for the accompanying language lab section.

Appendix A (Continued)

Note: Your instructor is collecting data for her dissertation during this semester. Your participation is voluntary – please refer to the informed consent form for more information and feel free to talk to me about my investigation.

Grading and Requirements:

6 Written Exams	50%
2 Oral exams	20%
Lab	10%
Attendance and Participation Personal Interview 3 WebQuests	10%
Homework and quizzes	10%
TOTAL	100%

Written Exams: In-class examination comprised of listening comprehension, reading, writing, grammar, and culture. Short compositions and/or projects will also be assigned as part of the take-home portion of the exams.

Oral Exams: are conducted twice a semester. Students will demonstrate their oral skills in individual and pair situations.

Lab: consists of completing the listening comprehension (Hörverständnis) sections of the workbook. Expect to spend 1 to 2 hours every two weeks on the lab activities. Unfortunately, you have to do these activities in the Media Center on the 6th floor of the Library.

Attendance: Attendance is an important part of doing well in this class. If you do miss class, it is your responsibility to find out what we covered that day. You will not be allowed to make up any exams or quizzes, unless you notified me of a valid reason **before** the class period and/or submit a doctor's note. You will be expected to make up any homework assignments you missed due to your absence. Late assignments will be lowered by one letter grade. Excused Absences will be granted **ONLY** for medical reasons and with a doctor's note. **If you miss 6 (six) or more class sessions the best grade you can earn for this class is a B.**

Participation: The best way to learn a language is to use it. Since German class is most likely your main opportunity to use German, I expect each of you to participate actively

Appendix A (Continued)

during class – that means to come to class prepared, to volunteer, and to actively

participate in group activities. Please remember, if you are not present you cannot participate.

Up to 6 points for regular in-class activities as follows:

6 – 5 points	Student has perfect or near perfect attendance, and is well prepared for every class session, volunteers productively every class, and participates in German whenever possible.
4 – 3 points	Student has only very few absences, is prepared for every class session, frequently volunteers, and generally participates in German.
2 – 1 points	Student is frequently absent, sometimes unprepared for class, volunteers only occasionally, or only speaks when called on. Participation is only occasionally in German.
0 points	Student is frequently absent, generally not prepared for class, does not volunteer, and only occasionally responds when called on.

The remaining 4 of the attendance and participation points are earned by participating in an individual interview with the instructor and by completing **all three** WebQuests.

Homework and quizzes: Students will receive a schedule for each chapter, listing class topics, page numbers and due dates. Specific homework will be assigned at least twice a week and will be collected from time to time. Unannounced quizzes will be given periodically – approximately one a week.

Important Note: This is a 4 credit course. IN ADDITION TO specific homework assignments, studying for quizzes and exams, and completing the lab activities, you should expect to spend at least 1 hour every day to review what we did during class, and to study grammar and vocabulary.

Grading:

A	93-100
A-	90-92
B+	87-89
B	83-86
B-	80-82
C+	77-79
C	73-78
C-	70-72
D	<70
F	<60

Appendix A (Continued)

Wichtige Daten:

20.01.	Martin Luther King Junior Day
22.01.	WebQuest 1 (EDU252)
24.01.	Klausur 1
06.02.	Klausur 2
18.02.	WebQuest 2 (EDU252)
20.02.	Klausur 3
25.02. und 26.02.	mündliche Prüfung 1
10.03. – 15.03.	Spring Break
18.03.	WebQuest 3 (EDU 252)
20.03.	Klausur 4
03.04.	Klausur 5
08.04. und 09.04.	mündliche Prüfung 2
24.04.	Klausur 6

Appendix B: Background Questionnaire

Fragebogen

1. Name: _____ 2. Age: _____
3. Language(s) you speak at home: _____
4. Have you ever studied German before? If yes, please tell me when, where, how long, how long ago, etc.

5. Why do you want to learn German? (Check all that apply)
____ interested in the language
____ interested in the culture
____ have friends or family who speak the language
____ required to take a language course to graduate
____ interested in getting a German major or minor
____ need it for my further career
____ need it for travel
____ other (list): _____
6. How important is it for you to become proficient in German? (Circle one)
very important Important not so important
7. What other language have you studied?

8. If you have studied an other languages, what did you enjoy about learning a language and what did you not enjoy about the experience?

- 9. Optional:** Tell me a little bit about yourself apart from learning a language. For example:
your major; something you are really good at, or you really like to do

Appendix C: Personal History Interview

I will ask you a few questions about your past learning experiences especially in relationship to reading, using computers, and working in pairs or small groups.

Questions:

1. How is the semester going for you so far?
2. Tell me a little bit about your favorite learning experience.
 - a. Can you remember an activity, or subject that you particularly enjoyed?
3. Do you consider yourself to be a good reader? (Why)
 - a. What makes you say that?
 - b. Are you a fast reader?
 - c. Do you have to read a lot for school? Is it easy for you?
4. What kinds of things do you enjoy reading?
 - a. News, novels, magazines? (favorite ones?)
5. Tell me how experienced you are in using the Internet.
 - a. Where do you access the Internet? (home, computer lab)
 - b. How many days a week do you access the Internet?
 - c. Can estimate how many hours a week you spend online?
6. What types of things do you like to do on the Internet?
 - a. "Just surfing"
 - b. News, weather, shopping, etc.
 - c. Travel planning
 - d. Research for classes
7. Do you have experience learning in pairs or small groups?
 - If "Yes", how do you feel about that experience.
 - If "No", do you think you would enjoy learning in pairs or small groups?

Name: und

Wie ist das Wetter?
Created by: Frau Sabine Siekmann



Introduction

Talking about the weather is usually a good conversation starter. Just like Americans, Germans like to talk about the weather and about whether they think it's good or bad. Because the weather is often not very good in Germany, many Germans like to travel all over the world - generally in search of "good" weather.

If we were planning a trip today, we would want to make sure that we pick a location with good weather and stay away from places where the weather is bad. As a class we are going to compile a list of the weather around the world. Since we only have a limited amount of time, we will divide and conquer to get information about as many places as possible.

Task

This task has several parts:

- Decide what makes weather good or bad (temperature, humidity, precipitation, wind, etc.).
- Predict in where in the world the weather might be good/bad today.
- Find one city anywhere in the world where the weather is good and one where the weather is bad Use the Internet to test your prediction.
- Write two weather reports for the rest of the class – one for the city where the weather is and one for the city where the weather is bad.
- Read the weather reports from around the world and complete the weather overview table.
- If you have questions about the German instructions below, use this information as a resource to figure out what you need to do.

Process

Teil1: Was ist gutes und was ist schlechtes Wetter?

- **Ohne** das Internet, in der Tabelle.
- Sprechen Sie (auf Deutsch) mit Ihrem Partner oder Ihrer Partnerin über das Wetter.
- Sprechen Sie über die Temperatur, die Luftfeuchtigkeit, den Niederschlag, den Wind, die Sonne, die Wolken, usw.
- Schreiben Sie auf Deutsch, in der Tabelle.

Appendix D: (Continued)

gutes Wetter	schlechtes Wetter

Teil 2: Wo ist das Wetter heute gut und wo ist das Wetter heute schlecht?

Gutes Wetter:

Was denken Sie, wo ist das Wetter heute vielleicht gut?

Schreiben Sie die Stadt hier:

Testen Sie das Wetter

Klicken Sie hier: <http://de.weather.yahoo.com/>

Suchen Sie eine Stadt, wo das Wetter heute gut ist.

Schreiben Sie auf Deutsch.

Die Fakten:

So ist das Wetter heute in:

Die Temperatur ist Grad .

Ist das Wetter wirklich gut?

Bleibt das Wetter so? Wie ist das Wetter morgen und den Rest der Woche?

Schlechtes Wetter:

Was denken Sie, wo ist das Wetter heute vielleicht schlecht?

Schreiben Sie die Stadt hier:

Testen Sie das Wetter

Klicken Sie hier: <http://de.weather.yahoo.com/>

Suchen Sie eine Stadt, wo das Wetter heute gut ist.

Schreiben Sie auf Deutsch.

Appendix D: (Continued)

Die Fakten:

So ist das Wetter heute in:

Die Temperatur ist Grad .

Ist das Wetter wirklich gut?

Bleibt das Wetter so? Wie ist das Wetter morgen und den Rest der Woche?

Teil 3: Schreiben Sie den Wetterbericht für Ihre Städte.

- Gehen Sie zum Blackboard Kurs.
- Klicken Sie auf "**Discussion Board**"
- Klicken Sie auf "**Das Wetter**"
- Klicken Sie auf "**Add New Thread**"
- Als **Subject** schreiben Sie einen Titel, zum Beispiel: "Sonnenschein in Teneriffa"
- Schreiben Sie den Wetterbericht für die Stadt wo das Wetter gut ist.
- Klicken Sie auf "**Submit**"
- Schreiben Sie jetzt bitte den Wetterbericht für die Stadt so das Wetter schlecht ist.

Teil 4: So ist das Wetter in der Welt heute

Lesen Sie die Wetterberichte der anderen Studenten und Studentinnen. Wie ist das Wetter?

Schreiben Sie auf Deutsch, in der Tabelle.

Stadt	Temperatur	Regen/Wolken/Sonne/Wind usw.	gut	schlecht
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>
			<input type="checkbox"/>	<input type="checkbox"/>

Appendix D: (Continued)

Conclusion

You have now compiled information about the weather all over the world. Which of the locations sound most enticing to you?

Credits & References

Based on the WebQuest framework. For more information visit [The WebQuest Page](#)
You can acquire the latest version of this template and training materials at [the Design Patterns page](#) so that others

"We all benefit by being generous with our work. Permission is hereby granted for other educators to copy this WebQuest, update or otherwise modify it, and post it elsewhere provided that the original author's name is retained along with a link back to the original URL of this WebQuest. On the line after the original author's name, you may add *Modified by (your name) on (date)*. If you do modify it, please let me know and provide the new URL."

■

Last updated on (9/15/02). Based on a template from [The WebQuest Page](#)

Name: und



Einkaufen

Created by: Frau Sabine Siekmann

Introduction

Because you are studying German you have decided to buy German items for everybody this year. The best way to do that is by shopping online at one of the many German mail order catalogues. When it comes to fashion and shopping, people's opinions often differ. Shopping with a friend is no fun if you cannot express how you feel about a particular item. During this WebQuest you will shop with your partner and talk about what you see.

Task

First, we will play "The Price is Right".

- ❑ Predict how much you think the different items might cost and then test your prediction.
- ❑ You will use the online version of the "Otto Katalog" to find the price of four items.
- ❑ Talk to your partner about how well you like the different items in the "showcase" and whether or not you think they are expensive – it's ok to disagree.
- ❑ Share your opinions with the rest of the class

Second, go shopping for your friends and relatives

- ❑ You will only have a limited amount of money
- ❑ You can either use the same site, or choose from several others that are listed further down on this worksheet.

Process

Teil 1: Wir spielen "Der Preis ist heiß"

- ❑ Gehen Sie zu <http://www.neu.otto.de>
- ❑ Finden Sie die Preise für die Stiefel, den Pullover, den Schlafzimmerschrank, und die Topmarkenuhr
- ❑ Schreiben Sie den Preis für die Gegenstände in die Tabelle
- ❑ Ist das teuer? <http://de.finance.yahoo.com/m5?a=1>

Appendix E: (Continued)

	
<p>Vermutlicher Preis: Wirklicher Preis: Ist das teuer?</p>	<p>Vermutlicher Preis: Wirklicher Preis: Ist das teuer?</p>
	
<p>Vermutlicher Preis: Wirklicher Preis: Ist das teuer?</p>	<p>Vermutlicher Preis: Wirklicher Preis: Ist das teuer?</p>

Wie finden Sie diese Dinge? Schreiben Sie ganze Sätze.

- 1.
- 2.
- 3.
- 4.

Teil 2: Schreiben Sie den Preis und Ihre Meinung in das Discussion Board in Blackboard.

- ☐ Gehen Sie zurück zu Blackboard
- ☐ Klicken Sie auf **Discussion Board**
- ☐ Klicken Sie auf **Einkaufen**
- ☐ Klicken Sie auf **Add New Thread**

Appendix E: (Continued)

Teil 3: Lesen Sie die Meinungen der anderen Studenten und Studentinnen.

Wieviele Studenten und Studentinnen finden diese Dinge gut?

die Stiefel	
den Pullover	
den Schlafzimmerschrank	
die Uhr	

Teil 4. Kaufen Sie Geschenke

- ☐ Sie haben jeder 200 Euro für Geschenke.
- ☐ Was kaufen Sie für wen?
- ☐ Wieviele Dollar sind 200 Euro? <http://de.finance.yahoo.com/m5?a=1>

Deutsche Internet Kataloge:

- ☐ <http://www.neu.otto.de>
- ☐ <http://www.neckermann.de/>
- ☐ <http://www.quelle.de/>
- ☐ <http://www.tchibo.de/>
- ☐ <http://de.shopping.yahoo.com/>

Wer?	Für Wen?	Welches Geschenk?	Preis

Conclusion

You have now been shopping in Germany – virtually at least. Did you find the items and prices to be very different from those in the US?

Credits & References

Based on the WebQuest framework. For more information visit [The WebQuest Page](#)
You can acquire the latest version of this template and training materials at [the Design Patterns page](#) so that others

"We all benefit by being generous with our work. Permission is hereby granted for other educators to copy this WebQuest, update or otherwise modify it, and post it elsewhere provided that the original author's name is retained along with a link back to the original URL of this WebQuest. On the line after the original author's name, you may add *Modified by (your name) on (date)*. If you do modify it, please let me know and provide the new URL."

Last updated on (01/05/03). Based on a template from [The WebQuest Page](#)

Name: und

Wir Planen eine Reise

Created by: Frau Sabine Siekmann



Introduction

Now that we all know some German, we have decided to take trip to the German speaking part of the world. German is spoken in Germany, Austria, or Switzerland. As a class, we need to decide where we want to go based on our preferences.

Task

I have preselected four locations that have different things to offer. First each of you needs to decide what makes a good travel destination. Do you like to go to the museum and go shopping, or do you like to go sailing and horse back riding, or is your idea of a good vacation going to the beach. After that you will virtually explore the four locations I have scouted out and choose which one you prefer. After that you need to need to gather some more information to convince the other students in the class that the place you have chosen is best, and make some concrete travel planning, such as where will we stay, what's the weather like, how do we get there, etc.

Process

Teil 1: Was wollen Sie im Urlaub machen?

Teil 2: Entdecken Sie die Städte:

Bitte schauen Sie sich die Webseiten für Wangerooge, Wien, und Interlaken an. Entscheiden Sie, welche Stadt sie wirklich mögen. Dann sammeln Sie bitte Informationen über die Stadt.

Appendix F: (Continued)

Webseiten:

(Wenn der Link nicht funktioniert, könne Sie die URL kopieren)

Wangerooge (Deutschland): <http://www.wangerooge.de/index2.html>

Wien (Österreich): <http://www.info.wien.at/index.html?popup>

Interlaken (Schweiz): <http://www.interlakentourism.ch>

a) Wohin möchten Sie fahren?

b) Wo ist die Stadt?

c) Was kann man in Ihrer Stadt machen?

d) Wie ist das Wetter dort?

e) Wo kann man / wollen sie schlafen?

f) Kann man in dem Hotel schwimmen, essen, parken? Darf man rauchen?

g) Wie viel kostet ein Zimmer?

h) Ist das teuer?

i) Warum wählen Sie diese Stadt?

Man kann gut in Ferien machen, weil

Teil 3: Schreiben Sie Ihre Meinung in das Discussion Board in Blackboard

- ☐ Gehen Sie zurück zu Blackboard
- ☐ Klicken Sie auf **Discussion Board**
- ☐ Klicken Sie auf **Wir Planen eine Reise**
- ☐ Klicken Sie auf **Add New Thread**

Appendix F: (Continued)

Teil 4: Zusammenfassung

Lesen Sie die Meinung der anderen Studenten und Studentinnen.

Stadt	Wie ist das Wetter?	Was kann man machen?	Wie ist das Hotel?

Conclusion

I hope we will be able to find a place we can all enjoy. Maybe you will get a chance in the future to plan a trip to one of these locations.

Credits & References

Based on the WebQuest framework. For more information visit [The WebQuest Page](#)
You can acquire the latest version of this template and training materials at [the Design Patterns page](#) so that others

"We all benefit by being generous with our work. Permission is hereby granted for other educators to copy this WebQuest, update or otherwise modify it, and post it elsewhere provided that the original author's name is retained along with a link back to the original URL of this WebQuest. On the line after the original author's name, you may add *Modified by (your name) on (date)*. If you do modify it, please let me know and provide the new URL."

■

Last updated on (11/11/02). Based on a template from [The WebQuest Page](#)

Appendix G: Stimulated Recall Interview Excerpts

F/B Stimulated Recall Interview 1

- 10 F: You're going to hear what we said? Oh my god.
11 B: Alright, good times.
12 *S: So I want to ask you what you remember about task 1, that first on that we did*
13 *in the computer lab.*
14 F: That was about the weather, right?
15 B: Trying to look up the weather in different parts...
16 F: I remember everything.
17 B: Because we went to Australia, and we looked up your hometown in France.
18 F: Yeah, Strasbourg, I remember.
19 B: Yeah, and we looked up some places in Germany
20 *S: Uh huh, did you remember any words that...*
21 B: There was one word that we kept having a problem with.
22 *S: Uh huh.*
23 F: And we even looked in the dictionary. Many times we looked in the dictionary
24 because I like to look in the dictionary.
25 *S: Do you remember any technical problems that you had, like anything in terms*
26 *of using the computer that didn't work right?*
27 F: I don't know, I think it was fine. Well, we were not familiar with it at the
28 beginning, so we kind of went around the ---- a couple of times to see where is it.
29 But I think it was fine.
30 *S: Yup, ok, let me put the tape at 6 minutes.*
31 F: We disagreed about what was cold and hot water.
32 B: Yeah.
33 *S: That's right, because you like it really...*
34 F: I like it really hot.
35 *S: You like it really hot.*
36 F: I like it hot.
37 B: I hate hearing my speaking voice.
38 (Listening)
39 *S: Do you remember what you were trying to do?*
40 F: That's me doing the thing.
41 B: This is an amazing program.
42 F: It is.
43 *S: So you were trying to put the ü in there, right, the Umlaut?*
44 F: Oh, the Umlaut, so look at us, we're like searching.
45 B: Now I know that it's under "symbol".
46 (Listening)
47 *S: I'm like, my voice is the worst, so...*
48 B: No, it's not that, it's that the sound is completely different to yourself.

Appendix G: (Continued)

- 49 F: And I'm ready to give up and write without the Umlauts.
50 S: *I think you say it because we had the green sheet, and you used the 'Alt' thing.*
51 *I think, were you using these numbers?*
52 B: We were first trying to do it on the number pad, on the side of the keyboard.
53 F: On the pad, yeah, but it didn't work, I don't think.
54 S: *That's a good assumption. This is the kind of the stuff that I'm interested in.*
55 *You know, because we're doing all these things with the technology now but it's*
56 *adding a whole other level to the class and to the learning and this is one of the*
57 *things that, you know, well, if you've never done the umlaut, how do you know*
58 *how to make it? And even though I gave you the thing that says you know, Alt, you*
59 *know...*
60 F: And we didn't even look at it to start with, then we started to look in the
61 computer first. And then we saw the sheet, and we're like, oh there's the sheet,
62 and then he tried to use it and it didn't work.
63 B: Because we used the number pad.
64 S: *And then you were like,*
65 F: And then I was like, ok, let's do it without it, like, we need to finish it, you
66 know, we need to go. And I wrote it without it.
67 S: *Right. So did you... But the second time around you knew how to do it, right?*
68 F: I think we ask you. Ah, maybe we did now.
69 S: *Maybe you decided to not use it, because you couldn't do the umlaut, so you're*
70 *looking for another word.*
71 B: Probably.
72 S: *Do you remember struggling with that, or is it kind of funny seeing it now?*
73 F: Well now I remember...
74 B: I remember, yeah.
75 F: ...that I see it, but I couldn't remember before.
76 S: *That's why I have these little clips to kind of put you back in the moment to see*
77 *what you can remember about that. I think the problem was that you weren't*
78 *holding down the Alt key while you were putting in the numbers.*
79 B: What it was is it was...
80 S: *Or maybe the key...*
81 F: Or maybe we were just pressing Alt and doing the numbers instead of just
82 pressing during.
83 S: *Do you remember what happened?*
84 B: I remember what happened. Is that the number pad, the key pad, either the
85 number lock wasn't on, or I couldn't find the number lock, or it just didn't work
86 with that. Then you had to do with...
87 S: *Right, ok.*
88 B: Because we did get to work eventually on something. But I would assume,
89 when I go to, but those were Macintoshes, weren't they...
90 S: *No, they were PCs.*

Appendix G: (Continued)

- 91 B: They were PCs. So, cause when you go to Insert, and go to ‘Symbol’, all the
92 symbols are supposed to be there, and when it wasn’t, I was like, well maybe this
93 computer, it’s just not a symbol that it has. Because usually it has everything,
94 Sanskrit and all kinds of stuff.
95 *S: I know, it just depends on the palette that they give you. I always use the*
96 *keypad because I don’t like going to Insert and this and that. So once you get used*
97 *to that, that was just my way, I don’t know. Ok, and then I had something...*
98 (Listening)
99 *S: I see you found Melbourne, you found the weather in Melbourne.*
100 F: Yeah, that was what we were supposed to do, right?
101 (Listening)
102 *S: Is this the word that you mean?*
103 B: überwiegend
104 F: No, überwiegend is the one you looked up, isn’t it?
105 B: I think so.
106 *S: Uh, huh.*
107 (Listening)
108 B: überwiegend, uh huh.
109 *S: So you were able to make a hypothesis, it seemed like, because you even said it*
110 *means mainly cloudy.*
111 B: Because we saw the picture.
112 *S: And that was exactly what it said.*
113 F: But I mean, I’m different, I need to go and look in the dictionary
114 *S: Did you find it? Was it in the dictionary?*
115 F: Yeah, it was right?
116 B: In the little dictionary.
117 F: And then I think I told you you were right. Yeah, but when I read in my
118 language, my mom always, when you don’t know, what it, even if I talk and I say
119 a word that I’m not sure about, she knows I’m sure about the word because I use
120 it wrong, she always tells me, dictionary.
121 *S: Ok, how about you, Brant? Would you, what would you do, if you were by*
122 *yourself, would you look it up, or do you think you would just go with your*
123 *assumption? What do you think?*
124 B: It depends. I don’t know, in this scenario, I probably would have looked it up.
125 What I do, is like, if I’m reading a book, and it has, I usually, instead of using just
126 a bookmark, I have a piece of paper in a book, and I keep it with the book, and as
127 I read it, if I get to a word that I don’t know, I’ll write down the word and look it
128 up whenever I get the chance. And usually I keep the bookmark with the book,
129 because that way when I end the book I can review all the words that I should’ve
130 learned.
130 *S: Right. Should’ve learned?*
131 B: Should’ve learned.

Appendix G: (Continued)

- 132 F: Wow, that's... I would never do that.
133 S: *Well you have your little vocabulary and notebook.*
134 F: I need everything on hand and right away because if I wait I'll forget about it.
135 It's all stuff that you put back and back and back.
136 S: *So, I also don't have a clip for this, but you were struggling with bleibt das*
137 *Wetterso, do you remember this part right here when it asked you bleibt das*
138 *Wetter so? Do you remember what it was asking you?*
139 F: Bleiben is to stay, isn't it?
140 S: *Uh huh.*
141 F: So it's just the "weather stays the same."
142 S: *You guys struggled with it a lot...*
143 F: I guess now my knowledge is better, that's why I can deal with it. But
144 sometimes there's sentences that you look, and you're like, it's doesn't make
145 sense at all.
146 S: *Did you feel that way with this? I noticed you were a little bit frustrated in the*
147 *middle at some point, right?*
148 B: Yeah because we stopped and skipped something and we were like, well we
149 don't have time, we can't finish this now, so we still have the other stuff to do.
150 F: I think we were worried about the time.
151 S: *Did you look at the whole thing before you started?*
152 F: Of course not. Nobody does that.
153 S: *You know what, I asked some of the other groups, if I had given this to you on*
154 *paper, and it was a three-paper thing.*
155 F: I would have looked, of course, but because it's on the computer, I didn't look.
156 S: *Why do you think that is? Do you have an explanation for that? Do you have*
157 *any... because it helps you, it helps you; it's like 4 pages long.*
158 F: Because maybe I think that we are then being ---- about that. Like for the
159 papers, always. Look at your task, look at all the pages before you actually start
160 doing the test. And they told us so many times that we actually do it now.
161 S: *Well that's one of the thing that I'm interested in because everyone... students*
162 *know that they're supposed to look at the whole thing. You know, my idea is that*
163 *the computer really changes a lot.*
164 F: Oh, it does.
165 S: *You know, changes so many things. Maybe the third one, you could try to do*
166 *that.*
167 F: Will you remember?
168 B: Yeah, tomorrow.
169 S: *That one that, maybe you could look at the one... Did you guys read the*
170 *English instructions for this one? I don't think you did.*
171 F: No.
172 S: *For the second one did you?*
173 B: Yes, I remember.

Appendix G: (Continued)

- 174 F: We did?
175 B: I think so, yeah.
176 F: I don't remember.
177 B: I think I got there before you did, though.
178 F: Oh, maybe.
179 B: I was sitting there waiting for you.

F/B Stimulated Recall Interview 1

- 200 S: And that's why I chose to give you an overview of English, so that you would
201 feel some sort of, "ok, I know kinda what's going on," um...
202 F: But I'm so bad about instructions. I don't read the instructions.
203 S: I know you just went to the first blank...
204 F: I'm like so ready to do it.
205 S: The first blank, "ok, let's do this, what do we need to put in here?" Is that...
206 F: Yeah, I don't read the instructions. And in the book I always read the example.
207 I read the example, then I'm like, just do the same, that's the example. Who cares
208 what you're supposed to do.

D/C Stimulated Recall Interview 1

- 179 *S: That one should be a little bit closer in your memory, so...*
180 C: Ok, well, we started off with ----- and went to this online catalog...
181 D: And I remember we had boots...
182 *S: Do you remember the word for boots?*
183 D: Stiefel?
184 C: Um, I don't know... the trunk, and one more thing, the sweater I think that was
185 it, didn't we have four?
186 D: I remember we were like way off on the price.
187 C: We had to make predictions beforehand about what the price was going to be
188 and then actually look it up.
189 D: I thought we did pretty good except for the watch, outfit of the watch, we
190 though it was expensive.
191 C: Gucci watch or something like that.
192 D: Yeah we were like way off.
193 *S: Well that was good, so you remembered a lot more about that one. Do you*
194 *think it was more interesting, that task two, than the other one?*
195 C: Well, it was a little bit more interesting, because, for me anyway, just because,
196 being in the class for a little bit longer was easier to navigate the German a little

Appendix G: (Continued)

197 bit more. I mean, when you have no information at all, you're sort of preoccupied
198 with understanding every little part and you don't really get involved with the
199 task.
200 *S: What about you, did you enjoy the "Price is Right" type of thing rather than*
201 *picking a random place to look at the weather?*
202 D: I thought doing both was interesting, but I did probably did like looking at the
203 prices more,(???), more realistic type of view, on a more regular basis. Because I
204 don't know whether I could turn the channel on the TV to the weather channel or
205 go to the internet, although I have, but not often, because I probably bought one
206 catalog..
207 C: You could see how much things cost and (???) and well actually it turned out
208 (??).
209 *S: That was so expensive.*
210 C: Yeah, it probably would be here, too, but you know, that's a different culture
211 than (???) even if it's here, so...
212 *S: Not something you buy.*
213 C: \$500, something like that, or 800...
214 *S: Seems like 700.*
215 C: Same thing without the cheese, ECI, and Wal-mart.
216 *S: Oops, this is not you guys. I'm sorry...*
217 (Listening)
218 *S: Now here you were actually, compared to the first one, here you actually, you*
219 *read every single word of the instructions. Do you remember why you did that?*
220 *Because the other one, I don't know, you might have been reading them...*
221 D: I think we kind of just read ---- the other one, ----.
222 C: One reason, I'm sure, I was concerned with reading it because I remember I
223 showed up late to the thing, to make sure that I was like, you know, caught up
224 with whatever was doing.

D/C Stimulated Recall Interview 1

292 *S: So when you were saw these tasks, what was your approach? Were you like,*
293 *ok, this is just what we do today, let's just go ahead and get it over with? Or do*
294 *you remember what...*
295 C: Could you be a little more specific? I mean...
296 *S: Well, I guess what I'm asking is if you kind of recognized the learning*
297 *opportunity that was there, or if you were just kind of trying to pass the time.*
298 D: I actually preferred, you know, to be in the lab when it comes to it, if it's like
299 when I'm doing other assignments, it's more fun to be on the computer than to be
300 writing or taking notes or something. I actually liked when we'd go do to the lab

Appendix G: (Continued)

301 learning thing. But I would just sit and find out what we had to do.
302 *S: I mean, like, did you focus, for example, focus on the German, when you know,*
303 *anything... because some people do and some people don't. They think hey, it's*
304 *German class, and I'll do everything I can in German.*
305 D: Oh you mean, like doing the Web Quest?
306 *S: Actually doing it, during the Web Quest, because I wasn't around all the time. I*
307 *didn't make you do anything. You were just kind of on your own doing it.*
308 C: I, um, don't really do that because I've had language classes before and,
309 although I think that would be useful to try to communicate as much as possible,
310 I've found usually that the people I work with think that's kind of weird. So, I
311 don't do that anymore so much. I do do it a little bit, actually, but she's good
312 about it.
313 D: And I just say, "What?" and I don't know what to say and repeat it for me.
314 *S: I know you did the numbers in German.*
315 C: Yeah, well, I had the numbers down, nothing else. At least I had the numbers.
316 D: It's more fun if you understand a little more, like when we're doing something
317 that we're working on in class, colors, or, you know, articles of clothing and stuff.
318 I had some understanding of it so it's kind of fun to track the cities in the class.
319 We'll be trying to figure out how to get to ----
320 C: Yeah, and you're really good about trying to, but then when you don't have
321 to...
322 D: I don't think that I do it all the time, but when something that I can't
remember,
323 I'll practice. I think he does more than me though.
324 *S: So you're comfortable that way, you know, since you're both kind of feeling the*
325 *same way.*
326 C: I think it's good that we got cleared up with both of us, well, I don't know,
327 neither one of us is particularly good at German but at least we're both kind of
328 engaged with the class.
329 D: Well I know I worked hard in the beginning. I don't know how well it pays off
330 in my speaking, but I was actually doing the work, so, you know.
331 *S: And did you feel that you each had a specific role that you played? You know,*
332 *like, in some groups you had one person who was the task master, "Ok, let's move*
333 *on, let's move on, let's move on." Did you feel that you had that?*
334 D: What, you mean when we were doing the work?
335 *S: Yeah, when you were doing the Web Quest, that one of you was always doing...*
336 *like you switched, you already switched off using the computer.*
337 D: The first time I was on the computer, but we were still, you know, talking
338 about everything, and he was on the computer next time. I don't know if it was it
339 seemed like one of us was doing more of something.
340 C: I don't know, more than anything else it seemed pretty balanced to me. I mean,
341 it was just kind of an unusual experience for me. Like I said, I think it's nice that

Appendix G: (Continued)

- 342 we got paired up because we got engaged with it. A lot of times there's sort of a,
343 you know, that sort of thing where one person takes on a certain kind of role
344 happens because there's some sort of imbalance there or something like that.
345 One's dominant in some way.
346 D: Yeah, you do all the work and I'll just sit here.
347 C: But you know, it's been fun.

M/J Stimulated Recall Interview 2

- 87 *S: You guys are funny. So it seems that you have really developed a good, you*
know, kind of a, working...
88 J: Yeah.
89 *S: You know, working together.*
90 J: Yeah, it worked out – thankfully. I remember telling you that I don't really like
group work, when I don't feel comfortable with the material; but it worked out

M/J Stimulated Recall Interview 2

- 127 *S: Did you see a progression in your participation in the class, do you think?*
128 J: I think so. I mean, I don't think I had to work as hard as if I had worked alone,
129 cause Michael was there to interpret stuff and everything, but I think I got better, I
130 don't know.
131 *S: Did you do the writing and clicking this time? I know you started out doing it,*
but then did you...
132 J: No, I think Michael took over. I think that's a male thing. He didn't really give
133 me a choice.
134 M: Sorry.
135 J: It's ok.
136 *S: So how do you think the task would have been different for you guys if you had*
done it individually?
137 J: It would have taken longer, I think.
138 M: It wouldn't have been any fun.
139 *S: It wouldn't have been any fun?*
140 M: Not really because, well, I mean, it wouldn't be, like, boring, but it wouldn't
141 be like, "Haha, I'm having fun."
142 *S: Uh huh. Is that what it was, was it "Haha, I'm having fun?"*
143 M: Yeah. I mean, you were doing work but at the same time you were just
144 screwing around almost. But not in a bad way.
145 J: With the rockets.
146 *S: Well, you were on task the whole time. I mean, you really weren't ever just like*

Appendix G: (Continued)

149 *goofing off or whatever; which often that's something, on the computer, that's one*
150 *of the complaints teachers have. The students can't do what we ask them to do*
151 *and complain. Did you feel the temptation and then because I was recording you*
152 *didn't do it? Or...*
153 M: I think I might have said once or twice like jokingly that we should go to some
154 porn sites or something. I mean, but I was never serious.
155 J: I'm trying to remember... Which when we were tempted to go to an English
156 web site and ----
157 M: It wasn't like screwing around though. It was, it was just, "I don't know what
158 this website's saying; let's go to an English," kind of thing.
159 S: *Uh huh. So you... Ok, tell me about you using the dictionary. Do you think you*
160 *used it a lot?*
161 J: Yeah.
162 M: For the Web Quest or overall?
163 S: *For the Web Quest.*
164 M: No, no, a fair amount, I guess. Not like every word or something, but, if I
165 didn't see a word I wouldn't call you from the other end of the room to like run
166 over here and tell me what one word meant when I had a dictionary, so...um...
167 S: *Was there a difference between the words and the instructions compared to the*
168 *words on the website? Like in terms of how important you felt it was to really*
169 *understand what the different elements of the sentence were?*
170 M: I think it was less important on a website because it was more visually
171 oriented. So you see they have like a picture of a bar or something next to a
172 sentence, so you don't even have to read the sentence you just realize that this is
173 'Nightlife' or something, you know? But, uh, when it's just all text you kind of
174 have to figure out what's going on in the dark.
175 S: *Umm hmm.*
176 J: That sounds good.
177 S: *Sounds good? Did you notice that though, or is it just something...*
178 J: No, I did, because we had, um, you had actually come over one time, and were
179 trying, I forget what we were trying to find again, I think we were trying to show
180 you (???), and I think we did rely somewhat on the dictionary.
181 S: *Well on the shopping site, did you guys use a search function, to find*
182 *information you were looking for?*
183 M: Yeah.
184 S: *And, you didn't use that strategy for the Interlaken site, was there no search*
185 *function, or, did you decide to go about it a different way?*
186 M: If there was one it didn't jump out at us to use. I think, I think we just kind of
187 went through the different categories and try to figure out what they were at first.
188 Instead of trying to figure out what the words were we would just click on them to
189 see where they led and then we would figure out that this means that, a result.

Appendix G: (Continued)

190 And just kind of screwing around to see what it meant. And, I think, that was our
191 strategy to figure out what we were going to do and stuff.
192 *S: Ok. Did you have a hard time finding places to stay? Was that something that*
193 *was easy to find?*
194 M: Oh that was pretty easy.
195 J: Yeah, I think we just went with the most expensive one.
196 M: At first we were trying to find some really bad place to stay and it was really
197 cheap and crappy, but...
198 J: But there wasn't any; there weren't any.
199 *S: Well, it's Switzerland.*
200 M: So we just decided to go with the one that cost 700 bucks a night or whatever.
201 *S: Let's see here, you were really clicking on everything.*
202 M: Yeah, I accidentally went, I think it took me a while to realize the Interlaken
203 was actually a city. I thought it was like a travel agency website.
204 *S: Oh!*
205 M: That's what I thought, I thought that it was a company. So when I went to the
206 other sites, I was like, "these are different cities, alright I've got it now." But we
207 couldn't do this, we had already picked Switzerland.

M/J Stimulated Recall Interview 2

355 *S: In terms of your goals for learning German, have they changed throughout the*
356 *semester? Or did you go in expecting one thing and getting a different thing, or,*
357 *what would you say?*
358 J: I don't think I went in with any expectations. I'm happy where I am now, you
359 know, I feel like I learned a lot. Like in the beginning you asked me, the first day
360 we were here, if I had ever taken any German courses. I said no, but I had bought
361 one of these German CDs and I realized what crap they were. Now, I'm looking
362 back, I realize I was pronouncing everything wrong. Like I need the official
363 aspect of it. I don't know if I answered your question.
364 *S: So what kind of goals would you set yourself for maybe second semester*
365 *German?*
366 J: Hmm...
367 *S: You haven't been thinking about that. I mean, I know it's kind of a, 'Well, I'm*
368 *going to take the course...'*
369 J: Because I'm not sure what you learn in that level.
370 *S: But in terms of your own, your own kind of enjoyment with the language.*
371 J: Well, at first I had like to raise my hand (???) and I was like, God, I have no
372 one to speak to, how am I going to use this, because all my friends are Hispanic
373 and they all speak Spanish to one another and I'm just sitting there because I have

Appendix G: (Continued)

374 no idea what's going on. But now Michael and I have become really good friends
375 so we attempt to speak with the computer. I guess I just want to use it a little more
376 every day. I don't know because I try to write to my friends in German whenever
377 I write them notes, and I think they get annoyed. Because they can't understand it.
378 So I'm like, here, I'll read the notes to you. But, I guess just try to speak it more,
379 become more confident. I think the fact that I'm so apprehensive hurts because
380 when you say something to me I say 'Yeah'. So I guess just become more
381 comfortable and speak more. Yeah.
382 *S: Ok. How about you?*
383 M: I guess my goals for the next one? I'd like to go listen, hear it better and speak
384 it better. Because I think I can write it and read it, I mean, fairly well, and, that's
385 the same way with Spanish when I was taking it. Writing and reading it I was
fine,
386 and speaking actually after four years was fine, that was easy. Now hearing it at
387 full speed I couldn't ever do it. It just sounded like one word. An entire sentence.
388 Sometimes when I'll be doing a listening lab it just gets completely frustrating
389 and I just want to punch the thing. They'll say something and I just have no idea
390 what they're saying, how am I supposed to write down what they're saying, you
391 know?
392 J: You have to keep rewinding it a hundred times.
393 M: I'll rewind it like five times and be like, man, screw this, I'm skipping it. I'll
394 spend my entire day here listening to the thing.
395 *S: Yeah, this is really difficult to pick up, different speakers,...*
396 J: I rented *Run, Lola, Run* the other day, and when I got it it was dubbed in
397 English, you know? And I was like, I didn't want this, so I returned it and they
398 were like, this one, take this one, you know? It was dubbed in English too, so I
399 went back and finally I was watching it the other day and I could get like three
400 words. We were like oh, you knew that one.

Jo Stimulated Recall Interview 2

66 *S: Did you think that you were doing what you were supposed to be doing?*
67 J: Um...
68 *S: Or were you not really sure?*
69 J: I really didn't know. I was just kind of like, "alright, what are we supposed to
70 do next?" kind of thing.
71 *S: Uh huh. I remember you telling me earlier that you really like to just follow the*
72 *instructions, and do what it is you need to do, right?*
73 J: Yeah, I like to get stuff done, you know, I like to see, seeing our options and
74 then going with that. She had kind of already decided what we were going to do.

Appendix G: (Continued)

- 75 *S: Oh, ok. So I'm intervening a little bit here, because I want to make sure that*
76 *you guys are doing it right.*
77 *(Listening)*
78 *S: So, how did you, did you think that, it seemed to me that that was kind of a*
79 *gratuitous time for me that I came in and just got you guys focused. That was my*
80 *impression.*
81 *J: Yeah, it was good. It was a good time.*
82 *S: It doesn't always work out that way. I mean, that's the thing about group work.*
83 *It just kind of happened that...*
84 *J: Yeah, I don't know if, pardon me, L, but um, if she knew exactly what was*
85 *going on, or if she had an idea of what we were going to be doing, since I came*
86 *and she was working with someone else.*
87 *S: Yeah, I had paired her with someone else so she didn't have to do it by herself.*
88 *J: So I don't know if she already had an idea of what we were going to do.*
89 *S: So did that get you back on track, you think, when I intervened, and said, "Ok,*
90 *guys, did you do this?"*
91 *J: Yeah, it kind of gave us a focal point of what we need to do, um, kind of got us*
92 *started back. We were just looking for words and stuff and we actually tried to*
93 *work on the task itself after that.*

Jo Stimulated Recall Interview 2

- 103 *S: Then I think you start kind of checking out different places.*
104 *J: Yeah I wanted to see what the other options were.*
105 *S: She was already kinda...*
106 *J: She was set in her ways, in how what was going on, what we were to do.*
107 *S: So how did you deal with that, did you just kinda...*
108 *J: We kind of just, I was like, fine, we'll just do it.*
109 *S: Oh.*
110 *J: We kind of agreed.*

Jo Stimulated Recall Interview 2

- 136 *S: You're looking at Wangerooze? She just said, "we're not going there," is that*
137 *what she said?*
138 *J: Yeah.*
139 *S: That's funny. How did you feel about that? Was she being a little bit bossy?*
140 *J: Yeah, she was.*
141 *S: Was that with all three tasks that you feel she was being kinda bossy?*
142 *J: I kind of allowed it just to the fact that she's already had German before and*
143 *she understood the words better than I did, and she would type it out, so. I just go*

Appendix G: (Continued)

- 144 with things as long as the task gets done.
145 *S: So you think would you prefer to maybe struggle through some of the writing*
146 *yourself, versus having someone there who just kind of does it for you, or...*
147 J: Well, it would have taken me a lot longer, because I would have to look up a lot
148 more words and check the spelling, and then type them out, whereas she would
149 know the words and spelled it out and everything. It's kind of like a 50/50. It's
150 nice to have someone there. Like we had translators over in Germany. And, but it
151 would have probably been more educational on my behalf to type it out. More
152 beneficial to the class itself.
153 *S: So you think you would have liked to have done it, you know maybe by yourself,*
154 *or maybe with another partner who was more at your level?*
155 J: Yeah, someone who was more at my level. I felt like the entire class was way
156 harder when I didn't like the majority of people at least that sat around, like, yeah,
157 "I've had German before, and it's my third year taking it, and I took it in high
158 school," and this is my first time.

Jo Stimulated Recall Interview 2

- 171 *S: So did that make you feel kind of frustrated?*
172 J: Yeah, I was frustrated. It kind of made me feel like I didn't know what I was
173 doing as well. A little inferior in the learning process.
174 *S: So, you think you've just kind of accepted the role of this kind of playing along*

175 *in this task and just kind of like, "oh, well, I'm not gonna..."*
176 J: Yeah, she was typing out some elaborate out sometimes, and I'm just like, "ok,
177 sounds good." She'd tell me in English, and I'm just like, "yeah."
178 *S: I mean overall it seems like you were working together pretty well, I mean you*
179 *were getting along. That's the first step.*
180 J: Yeah, I mean we get along fine; that was not a problem. She would do the
181 educational part, and I'd look for the stuff, and I'd use my Internet skills and
182 she'd use her German skills.

R/T Stimulated Recall Interview 2

- 80 *S: So if you had done this individually, how do you think it would have been*
81 *different?*
82 T: He'd have been done way before me. I think I could do it, but I probably
83 wouldn't have had this like proper, you know, text, like he would have had it.
84 *S: What about you?*
85 R: It would have taken me quite a bit of time to do it. If I'm going to turn
86 something in.... Cause if I'm just jotting something down on my own, you know,
87 I won't be as, you know, thinking about it. But if I'm going to turn it in, I try to

Appendix G: (Continued)

- 88 make sure everything is set and like, (???) and things like that.
89 *S: And in terms of, like, was it more fun to do it together, or do you think it would*
90 *have been more fun to do it on your own?*
91 R: He gets me out of my comfort zone.
92 *S: Why's that?*
93 R: Cause I mean, like I say, I would sit there and analyze everything and he
94 reminds me, "hey, we only have 50 minutes, let's go." Sort of like, on the job, you
95 know you have your manager sitting there, "c'mon, I need this report now, get it
96 done."
97 *S: What about you?*
98 T: I just like to do it as fast as I can as long as it's alright. You know, I don't mind
99 missing some points, but, as long as it's done in time.
100 *S: Would you prefer to do it by yourself?*
101 T: No, I would rather do it with someone else.
102 R: Get some interaction, different ideas...

Appendix H: Questions Prepared for Stimulated Recall Interviews

Stimulated Recall Interview 1

General questions

1. What do you remember about the two WebQuests we have completed so far?
2. Do you remember encountering any specific problems?
3. Do you remember any specific words from the activities?
4. Did you notice any changes from Task 1 to Task 2?
5. How did your group work together? Did you have specific roles?

Overview of clips selected for discussion

B/F

WebQuest 1	
6:00	Entering Umlauts
20:30	<i>überwiegend</i>
WebQuest 2	
3:15	Comprehending showcase
6:20	<i>Wirklich, vermutlich</i>
11:20	Searching for items
13:50	comma

D/C

WebQuest 1	
4:00	Comprehending task
18:17	Determining if temperature is listed in Celsius or Fahrenheit <i>Bleiben</i>
WebQuest 2	
1:20	Downloading worksheet
4:30	<i>Der Preis ist heiß</i>
13:30	Searching for items

M/J

WebQuest 1	
13:02	Comprehending the task
16:30	<i>Bleiben</i>
WebQuest 2	
3:00	Translating items in showcase
19:30	Writing answers (<i>Wie finden Sie...</i>)
27:45	Metatalk about how much they have completed

Appendix H: (Continued)

R/T

WebQuest 1	
8:11	Unknown words <i>Niederschlag, Luftfeuchtigkeit</i>
14:11	Conversion from Fahrenheit to Celsius
29:03	Finding a city
WebQuest 2	
0:20	<i>Der Preis ist heiß</i>
10:04	Decoding <i>Topmarkenuhr</i>
16:27	Finding the watch Talking about the use of a comma instead of a period for decimals

Stimulated Recall Interview 2

General questions

1. What do you remember about the last WebQuest?
2. Do you remember encountering any specific problems?
3. How would the WebQuest have been different if you had completed it individually?
4. Have your goals for learning German changed?

Overview of clips selected for discussion

R/C

2:30	<i>Urlaub</i>
9:20	Comprehending instructions
14:00	<i>Wien</i>
28:30	Searching for Hotel
33:40	Talking to the teacher via the microphone

D/C

2:30	Technical problem (no scroll bar)
12:30	Comprehending instructions
19:20	Reading Wangerooze activities
23:00	Technical problem (link does not open)
35:10	Misinterpretation of 6:30
36:00	Figuring out <i>Wohin/Wo</i>

L/J (conducted individually with J)

9:35	L explains task to J
21:00	Deciding which city to choose
29:00	Temperature

Appendix G: (Continued)

M/J

12:12	<i>Anschauen</i> “I should have know that one”
17:00	Looking for lodging options
30:00	Looking for weather Technical problem (computer froze)

R/T

3:00	Reading instructions
4:20	<i>Urlaub</i> Use of dictionary
14:00	Searching for <i>München</i> on the Wangerooge site
37:15	Controlling the pace
44:20	Metatalk about their task performance

Appendix I: Transcription Conventions

Verbal interaction

Black	Utterance in English
Red	Utterance in German
Blue	Computer action such as scrolling, clicking, pointing with cursor
Purple	Utterances by other groups that were picked up by the microphone
Gray	Off-task
Text ... (text)	Short pause (less than 3 seconds):
new line	Significant pause (more than 3 seconds):
...	Long pause
	Begin of overlap
<i>italic</i>	Utterance by teacher/researcher
caps	Comment about the way an utterance was made (whispering)
(in parentheses)	Non-“verbal” sounds such as laughter, coughing, etc.
(???)	Inaudible/incomprehensible

On-screen actions

Cl	Click
Rcl	Right click
Dcl	Double click
Cr	Cursor
Cr over	Cursor is located over a word
Cr circles	Cursor moves in circular motions over the screen
Cr follow along	Cursor moves over a line of text as students are reading the text
Ak	Arrow keys (used instead of the mouse)
Sc dn	Scroll down
Sc up	Scroll up
Tp	Type
Dl	Delete
Mwt	Minimized window tab
Teb	Text entry box (either on worksheet or Web site)
Ddm	Drop down menu
IE	Internet explorer
Tl	Text link

Appendix J: Strategic Behavior by operation type

Strategic Behaviors	OPERATIONS						Totals	
	Comprehension		Searching		Answering			
	#	%	#	%	#	%	#	%
Indifference	2		0		4		6	
Ignore	29		8		50		87	
Impatient	1		1		13		15	
Frustration	4		0		0		4	
Give up	1		1		2		4	
Challenge	0		1		1		2	
	42	3.4	11	3.2	70	4.7	123	4
Humor	6		1		1		8	
Praise	0		1		2		3	
Courtesy	1		0		4		5	
Support	5		0		6		11	
Accept	24		6		27		57	
	36	2.9	8		40	2.7	84	
Visual	10		8		3		21	
ORD	31		7		23		61	
ORT	10		2		6		18	
ORS	2		0		0		2	
Worksheet	4		1		8		13	
Check Web	1		1		2		4	
Comptool	8		1		1		10	
	61	4.9	20	5.7	43		124	4
EnCo	57		14		80		151	
NegCo	31		2		21		54	
TaskAssign	4		1		3		8	
CP	9		3		25		37	
ESRA	18		2		20		40	
ESR	44		8		28		80	
Pace	46		7		46		99	
Restate	23		0		3		26	
Uncertain	26		1		11		38	
Closure	6		3		7		16	
DK	16		4		8		28	
Skip	0		0		4		4	
Spell	3		3		42		48	
Gender	0		0		10		10	
Edit	4		1		51		56	
Umlaut	0		0		2		2	
Task	18		0		0		18	
	305	24.6		14	361		715	23.3
ILK	10		6		42		58	
Example	0		0		5		5	
Explain	8		9		28		45	
Model	0		3		4		7	
		1.4	18		79	5.3		3.7
RRA	3		3		57	3.8	63	
RRA(E)	0		0		7		7	
OD	6		5		76	5.1	87	

Appendix J: (Continued)

Pro	2		2		6		10	
CogPro	9		4		25	1.7	38	
AurPro	140	11.3	35	10	96	6.5	271	
VisPro	44	3.4	13	3.7	9		66	
PS	32		18		47		97	
TransGE	67		6		3		76	
TransEG	0		0		0		0	
	303	24.5	86	24.7		22	715	23.3
Sug	17		11		94		122	
Sug(E)	13		13		71		97	
SugModS	0		6		12		18	
SugModO	0		2		16		18	
SugAcc	11		17		85		113	
SugRej	1		2		16		19	
SugQuestS	0		0		5		5	
SugQuest	0		1		18		19	
SugAss	1		2		34		37	
TAEG	1		3		38		42	
TAGE	43		6		6		55	
TPGES	55		5		18		78	
TPEGS	7		1		12		20	
TPEGO	2		0		12		14	
TPGEO	19		0		6		25	
TAcc	51		2		12		65	
TQuest	11		1		4		16	
TQuestS	3		0		2		5	
TAss	20		0		2		22	
TModO	8		0		0		8	
TModS	23		2		0		25	
TRejS	1		0		0		1	
TRej	3		1		1		5	
Context	34		1		0		35	
Decode	17		8		2		27	
Evalinfo	1		19		4		24	
Hypo	46		9		4		59	
Scan	2		7		0		9	
Scan site	0		6		0		6	
		31.5	125	35.9	474	32	989	32.2
RepS	30		12		39		81	
RepO	22		11		29		62	
OLS	8		3		7		18	
OLD	23		5		13		41	
	83	6.7	31	8.9	88	5.9	202	6.6
	1238		348		1481		3067	

Appendix K: Overview of Strategic Behavior Tallies, by Dyad, Task, and Category

Strategic behavior	DYAD																								Total
	B/F				R/C				C/D				L/J				M/J				R/T				
	T1	T2	T3	Tot	T1	T2	T3	Tot	T1	T2	T3	Tot	T1	T2	T3	Tot	T1	T2	T3	Tot	T1	T2	T3	Tot	
Indifference	0	0	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	6
Ingore	13	6	8	27	6	0	0	0	10	9	11	30	3	0	2	5	1	0	2	3	9	4	8	21	92
Impatient	0	3	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	3	9	15
Frustration	0	2	0	2	0	0	1	1	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	4
Give up	0	0	0	0	0	0	1	1	0	0	0	0	0	0	1	1	0	0	0	0	1	1	0	2	4
Challenge	1	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
	14	12	14	40	6	0	2	8	10	9	12	31	3	0	3	6	1	0	2	3	14	7	14	35	123
Humor	1	0	0	1	1	0	0	1	1	1	0	2	0	0	2	2	0	0	0	0	0	2	0	2	8
Praise	0	2	0	2	0	0	0		0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	3
Courtesy	1	0	0	1	2	0	0	2	0	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0	5
Support	1	0	1	2	0	0	1	1	0	0	1	1	0	0	0	0	3	2	1	6	0	0	1	1	11
Accept	4	2	1	7	2	2	2	6	5	7	12	24	4	2	0	6	1	3	3	7	3	3	1	7	57
	7	4	2	13	5	2	3	10	6	9	15	30	4	2	2	8	4	5	4	13	3	5	2	10	84
Visual	0	1	0	1	0	0	0	0	3	2	0	5	5	1	1	7	0	3	0	3	0	5	0	5	21
ORD	12	2	3	17	2	1	0	3	9	0	4	13	0	0	2	2	6	7	5	18	4	1	3	8	61
ORT	1	2	0	3	0	1	1	2	2	0	1	3	2	0	0	2	4	0	1	5	1	2	0	3	18
ORS	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	2
Worksheet	0	3	1	4	0	1	0	1	0	5	0	5	0	1	0	1	0	0	0	0	0	1	1	2	13
Check Web	1	0	0	1	0	0	0	0	1	0	0	1	2	0	0	2	0	0	0	0	0	0	0	0	4
Comptool	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	2	0	0	2	0	0	0	0	5
	14	8	4	26	3	3	1	7	15	7	11	28	9	4	3	16	12	11	6	29	5	9	4	18	124
EnCo	9	12	12	33	10	5	3	18	21	19	10	50	4	2	3	9	6	7	4	17	3	9	12	24	151
NegCo	1	5	6	12	0	1	0	1	6	7	8	21	0	0	0	0	0	6	5	11	2	1	6	9	54
TaskAssign	3	0	0	3	0	0	0	0	1	0	0	1	0	0	0	0	2	1	0	3	1	0	0	1	8
CP	5	1	4	10	4	0	0	4	2	7	1	10	0	4	0	4	0	2	1	3	2	0	4	6	37
ESRA	4	2	4	10	1	1	0	2	8	1	6	15	0	0	1	1	2	0	3	5	3	0	4	7	40
ESR	3	4	3	10	0	1	1	2	11	0	10	21	2	4	2	8	2	13	3	18	5	13	3	21	80
Pace	7	7	8	22	3	3	3	9	5	9	10	24	0	2	4	6	4	6	5	15	10	5	8	23	99
Restate	2	1	1	4	0	2	1	3	2	2	10	14	0	0	1	1	0	0	3	3	0	0	1	1	26
Uncertain	1	1	3	5	0	4	2	6	3	6	3	12	1	0	0	1	1	3	4	8	3	0	3	6	38
Closure	3	1	0	4	0	1	0	1	2	4	3	9	0	1	0	1	0	1	0	1	0	0	0	0	16
DK	2	0	0	2	4	1	0	5	4	4	2	10	0	1	0	1	3	3	1	7	0	3	0	3	28
Skip	0	0	1	1	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	1	4
Spell	8	0	9	17	4	0	0	4	2	1	0		5	0	1	6	1	0	1	2	4	3	9	16	48
Gender	0	3	0	3	2	1	0	3	0	4	0	4	0	0	0	0	0	0	0	0	0	0	0	0	10
Edit	5	4	9	18	4	0	0	4	4	2	1	7	6	4	0	10	2	1	0	3	5	0	9	118	56
Umlaut	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Task	1	2	1	4	0	0	0	0	3	1	1	5	0	0	0	0	0	6	1	7	0	1	1	2	18
	54	44	61	159	33	21	10	64	74	67	65	206	18	18	12	48	24	49	31	104	38	35	61	134	715
ILK	3	1	6	10	1	0	0	1	5	5	5	15	1	0	0	1	6	2	2	10	15	0	6	21	58
Example	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	5
Explain	4	2	2	8	4	0	1	5	2	9	2	13	0	1	1	2	0	1	1	2	9	4	2	15	45
Model	3	2	0	5	0	0	0	0	0	1	0	1	0	1	0	1	0	0	0	0	0	0	0	0	7
	10	5	8	23	5	0	1	6	7	15	7	29	1	2	1	4	6	3	3	12	29	4	8	41	115
RRA	10	10	5	25	2	1	0	3	5	6	4	15	3	1	1	5	0	0	5	5	5	0	5	10	63
RRA(E)	0	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	0	0	0	0	0	0	0	7
OD	11	8	7	26	3	0	0	3	9	11	5	25	4	4	0	8	1	3	6	10	6	2	7	15	87
Pro	3	3	0	6	0	0	0	0	0	2	1	3	0	1	0	1	0	0	0	0	0	0	0	0	10
CogPro	5	0	3	8	2	0	0	2	2	3	5	10	0	2	9	11	3	0	1	4	0	0	3	3	38
AurPro	23	33	6	62	8	7	6	21	32	35	29	96	10	8	6	24	6	13	14	33	10	19	6	35	271
VisPro	3	2	2	7	1	4	6	11	17	8	9	34	1	0	1	2	0	0	3	3	2	5	2	9	66
PS	4	6	3	13	5	3	4	12	16	1	4	21	6	7	1	14	6	15	4	25	7	2	3	12	97

Appendix K: (Continued)

TransGE	3	0	1	4	0	2	5	7	17	3	20	40	1	0	2	3	2	0	18	20	0	1	1	2	76
	62	62	27	151	21	17	21	59	98	69	77	244	32	23	20	75	18		51	100	30	29	27	86	715
Sug	7	7	7	21	6	2	0	8	15	11	3	29	22	8	4	34	0	6	4	10	5	8	7	20	122
Sug(E)	0	4	15	19	3	3	0	6	6	10	0	16	9	7	2	18	7	5	5	17	3	3	15	21	97
SugModS	1	1	0	2	0	0	0	0	6	1	0	7	2	1	0	3	0	0	1	1	4	1	0	5	18
SugModO	2	0	0	2	0	0	0	0	2	0	1	3	2	10	0	12	0	0	0	0	1	0	0	1	18
SugAcc	4	6	10	20	3	2	0	5	9	10	4	23	13	13	2	28	1	7	4	12	9	6	10	25	113
SugRej	2	2	2	6	0	0	0	0	0	0	0	0	1	1	1	3	0	0	2	2	4	2	2	8	19
SugQuestS	0	0	1	1	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1	1	1	0	1	2	5
SugQuest	3	0	1	4	0	0	0	0	2	1	1	4	0	2	1	3	0	0	0	0	6	1	1	8	19
SugAss	4	1	2	7	0	0	0	0	2	1	0	3	0	5	1	6	0	0	1	1	16	2	2	20	37
TAEG	4	2	2	8	6	0	0	6	4	6	2	12	3	3	0	6	4	0	1	5	3	0	2	5	42
TAGE	4	2	3	9	2	1	0	3	8	3	12	23	4	1	1	6	1	2	5	8	0	3	3	6	55
TPGES	6	5	6	17	1	0	1	2	8	9	12	29	3	1	4	8	2	4	6	12	0	4	6	10	78
TPEGS	0	3	2	5	1	0	0	1	0	3	1	4	0	1	0	1	0	1	3	4	1	2	2	5	20
TPEGO	0	0	0	0	2	0	0	2	1	1	2	4	2	2	0	4	0	0	2	2	2	0	0	2	14
TPGEO	1	0	1	2	0	0	1	1	4	3	5	12	0	0	0	0	0	1	6	7	0	2	1	3	25
TAcc	4	2	3	9	2	2	2	6	4	10	11	25	3	1	0	4	0	5	10	15	3	0	3	6	65
TQuest	2	2	0	4	0	0	0	0	3	2	2	7	0	0	2	2	1	0	0	1	0	2	0	2	16
TQuestS	0	0	0	0	0	2	0	2	0	0	0	0	0	0	1	1	0	0	1	1	1	0	0	1	5
TAss	3	1	0	4	0	0	0	0	2	3	3	8	0	0	1	1	0	2	1	3	1	5	0	6	22
TModO	2	0	0	2	0	0	0	0	0	1	2	3	0	0	0	0	0	1	2	3	0	0	0	0	8
TModS	2	0	0	2	0	0	1	1	3	3	6	12	1	0	2	3	0	4	0	4	0	3	0	3	25
TRejS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	1
TRej	1	0	0	1	0	0	0	0	1	0	1	2	0	0	0	0	0	0	0	0	1	1	0	69	5
Context	0	4	1	5	1	0	0	1	13	4	7	24	0	0	1	1	1	0	1	2	0	1	1	2	35
Decode	4	1	0	5	0	1	0	1	2	10	4	16	0	1	0	1	0	1	0	1	0	3	0	3	27
Evalinfo	2	1	0	3	0	0	0	0	5	6	0	11	5	0	0	5	0	0	0	0	0	5	0	5	24
Hypo	3	1	2	6	0	0	4	4	10	9	7	26	2	0	1	3	2	2	6	10	0	8	2	10	59
Scan	0	0	0	0	0	0	0	0	3	4	0	7	0	1	0	1	0	0	0	0	0	1	0	1	9
Scan site	0	0	0	0	0	0	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6
	61	45	58	164	27	13	9	49	113	117	86	316	72	59	24	155	19	41	63	123	61	63	58	249	989
RepS	17	9	1	27	1	1	1	3	8	9	3	20	6	11	2	19	2	3	2	7	2	2	1	5	81
RepO	9	8	5	22	1	1	1	3	8	7	4	19	4	3	0	7	0	0	1	1	2	3	5	10	62
OLS	0	0	0	0	0	0	0	0	5	3	2	10	4	0	0	4	2	0	1	3	0	1	0	1	18
OLD	1	2	3	6	0	0	0	0	9	7	9	25	0	1	0	1	1	0	0	1	1	4	3	8	41
	27	19	9	55		2	2	6	30	26	18	74	14	15	2	31	5	3	4	12	5	10	9	24	202
Total	249	199	183	631	102	58	49	209	353	319	286	958	153	123	67	343	89	143	164	396	185	162	183	530	3067

Note: For each dyads listed at the top of table, number of coded strategic behaviors are provided for each task (T1, T2, T3), as well as overall (Tot).

Rows with a gray background indicate category totals

The right most column, (labeled Total) represents the sum of all instances a specific strategic behavior was coded for all dyads and tasks taken together. The final row (labeled Total) indicates the total number of codes assigned during each task (T1, T2, T3) as well as overall number of codes assigned to each dyad.

Appendix L: Examples of Codes Language Related Episodes

T1 B/F: Answering bad weather; with rain; successful (F) with dictionary	Strategic behavior	Tool use
<p>198: Unter seventy degree Fahrenheit...</p> <p>199: und... und... hm...</p> <p>200: tp und</p> <p>201: B: und regnet</p> <p>202: F: Regnet is es regnet</p> <p>203: B: Es regnet</p> <p>204: F: So it's not good</p> <p>205: und...</p> <p>206: B: That's schlecht</p> <p>207: F: und... mit ... ahhh</p> <p>208: Tp mit</p> <p>209: B: Yeah</p> <p>210: F: regnen... is eh</p> <p>211: Tp regnen</p> <p>212: B: What's regnen?</p> <p>213: F: How is just rain?</p> <p>214: B: Es regnet means it rains</p> <p>215: F: Yeah, but how do you say just rain the rain</p> <p>216: ...</p> <p>217: pages being turned</p> <p>218: Do you know how to say that?</p> <p>219: pages being turned</p> <p>220: B: No</p> <p>221: F: I'll figure it out right now</p> <p>222: pages being turned</p> <p>223: Mit Regen is... mit Regen... oder...oder Schnee.</p> <p>224: DI nen; tp en; tp oder</p> <p>225: So Regen ...is capital.</p> <p>226: DI r; tp R</p>	<p>RRA</p> <p>OD</p> <p>RRA; Sug</p> <p>SModO</p> <p>RepS; SAcc</p> <p>Evalinfo; restate</p> <p>AurPro; RRA</p> <p>Evalinfo; restate</p> <p>OD; AurPro</p> <p>Acc; support</p> <p>OD; PS</p> <p>TAGE</p> <p>Ignore; TAEG</p> <p>TPGES</p> <p>SugRej; ATEG</p> <p>RepS</p> <p>TAEG; EnCo</p> <p>DK</p> <p>TaskAssign</p> <p>OD</p> <p>SugModS; RKnow;</p> <p>ILK; edit</p> <p>RRA; OD; CP;</p>	<p>L2R; L1R</p> <p>L2S</p> <p>L2W</p> <p>L2S</p> <p>L2S; L1S</p> <p>L2S</p> <p>L1S</p> <p>L2S</p> <p>L1S; L2S</p> <p>L2S</p> <p>L2S</p> <p>L1S</p> <p>L2S; L1S</p> <p>L1S</p> <p>ORD</p> <p>L1S</p> <p>ORD</p> <p>L1S</p> <p>L1S; ORD</p> <p>L1S</p> <p>L2W</p> <p>L2S; L1S</p> <p>L2W</p>

Appendix L: (Continued)

227: Schnee oder... Weind Mit Regen oder Weind . Is that fine? 228: tp oder dl oder tp Wind	pace	L2S; L1S L2W
T1 B/F: Searching Website		
335: Sc dn to forecast 336: F: But it's sonning sonning überwiegnd sonning biewolk ... this is how you say 337: Go over each word for each day in the weather forecast 338: B: cloudy 339: F: cloudy 340: B: bewölkt 341: F: Because die Wolke is the cloud 342: B: (??), so 343: Bewolk (not quite ö) 344: F: wölk wölk (focusing his attention on the ö sound) 345: B: wölkt wölkt 346: F: wölkt 347: (Brant blows his nose) 348: F: OK. So good enough for this one or do you want to pick another one? 349: Sc up to top of page 350: B: That's fine with me	AurPro; RepS; visPro Hypo; TransGE TAcc; RepO Pro; AurPro Decode; Explain OLD Pro Model; RepO; RepS RepO; RepS Model; RepO ESRA; Pace; CP Closure; accept	L1S; L2R L2RIL1R L2RIL1R L2R L1S; L2S L1S L2S L2S L2S L2S L1S L1S
T2 D/C: Comprehending worksheet; figuring out what the items are		
180: What is the Schlafsimmerschrank ? 181: C: Schlafsimmerschrank 182: Sleep, room 183: Cr over parts of word 184: D: (???) 185: C: Bedroom armoire... ja ? 186: D: yeah? 187: C: Sleep room 188: D: Is that what Schlafzimmer is?...	TAGE; AurPro OLS; RepO; AurPro Decode; TPGES visPro Hypo; CP; TPEGs Tquest Decode ; Tass AurPro ; Tquest ;	L1S; L2R L2R L2RIL1R L2RIL1R; L2S L2S L2RIL1R L1S; L2RIL1R

Appendix L: (Continued)

<p>189: C: Well, Schrank is... is armoire, right?</p> <p>190: D: uhum....</p> <p>191: C: Zimmer is room. Schlaf is sleep</p> <p>192: So sleep room armoire</p> <p>193: D: Bedroom 194: C: Guess bedroom armoire</p> <p>195: D: (laughs) ok</p> <p>196: C: It's very utilitarianist...</p> <p>197: D: ok, what's the last one?</p> <p>198: (laughs)</p> <p>199: C: It's like this erector set... you know, you just kind of ... you know</p> <p>287: C: And I had the... this right.</p> <p>288: Cr over picture or armoire</p>	<p>TAGE</p> <p>Decode ; TPGES ;</p> <p>CP</p> <p>Tacc</p> <p>Decode ; TPGES ;</p> <p>TPGES</p> <p>Decode; Tass</p> <p>TmodO</p> <p>Tacc; RepO</p> <p>Tacc; closure</p> <p>Explain; ILK</p> <p>Ignore; pace;</p> <p>EnCo; TAGE</p> <p>Ignore; Explain</p> <p>Tass</p>	<p>L1S; L2R</p> <p>L1S</p> <p>L1S; L2R</p> <p>L2RIL1R</p> <p>L1S; L2RIL1R</p> <p>L1S</p> <p>L1S</p> <p>L1S</p> <p>L1S</p> <p>L1S</p> <p>L1S</p> <p>L2RIVL1S</p> <p>worksheet</p>
<p>T2_L/J</p> <p>Answering; writing “it is a good price”</p> <p>499: L: Ist das teuer? Ist das teuer?</p> <p>500: J: nah. I think that's actually a decent price for a man's pullover.</p> <p>501: L: I don't know. How do you say that?</p> <p>502: Tp nein</p> <p>503: J: Das ist</p> <p>504: L: That is decent</p> <p>505: Tp das ist</p> <p>506: You want to say that's a good price?</p> <p>507: J: (yawns) Yeah</p> <p>508:</p> <p>509: Let's see...</p> <p>510: Das ist gut preis</p> <p>511: Tp gut</p> <p>512: L: Is is ein gut? Ein gut preis?</p>	<p>AurPro; RepS</p> <p>Sug (E)</p> <p>DK; TAEG</p> <p>SugAcc</p> <p>OD</p> <p>SugMod (E)</p> <p>ESR; CP</p> <p>SugAcc</p> <p>PS</p> <p>OD</p> <p>AurPro; SugModO;</p>	<p>L2R</p> <p>L1S</p> <p>L1S</p> <p>L2W</p> <p>L2S</p> <p>L1S</p> <p>L2W</p> <p>L1S</p> <p>L1S</p> <p>L1S</p> <p>L2S</p> <p>L2W</p> <p>L1S; :2S</p>

Appendix L: (Continued)

	RepS SugAss; RepS SugAcc; edit	L2W L2S L2W
<p>513: Tp preis</p> <p>514: Ein gut Preis?</p> <p>515: Add ein before gut</p>		
<p>T3 M/J: Comprehending worksheet; Urlaub; dictionary</p>		
<p>60: M: Should we look at the whole thing first?</p> <p>61: Sc dn to Teil 1</p> <p>62: Was wollen Sie ...im Urlaub machen</p> <p>63: What's Urlaub?</p> <p>64: ...</p> <p>65: J: I have no idea</p> <p>66: M: I have it</p> <p>67: Sounds of getting out the dictionary</p> <p>68: ...</p> <p>69: ...</p> <p>70: J: ahm</p> <p>71: It's ...a vacation</p> <p>72: M: (???) yeah</p> <p>73: What's wollen?</p> <p>74: J: What's what?</p> <p>75: M: Wollen</p> <p>76: J: this?</p> <p>77: M: Yes</p> <p>78: J: Isn't it to want?</p> <p>79: Where do you want to go on vacation</p> <p>80: M: Oh yeah</p> <p>81: I'm (???) stupid (???)</p> <p>82: Alright. Where do we want to go on vacation</p>	<p>NegCo</p> <p>AurPro TAGE</p> <p>DK ORD</p> <p>PS TPGEO TAcc TAGE ESRA AurPro; RepS ESRA ESR TPGEO; hypo; uncertain TPGES; restate TAcc Pace; EnCo</p>	<p>L1S</p> <p>L2R L1S; L2R</p> <p>L1S L1S</p> <p>L1S L1S L1S L1S; L2R L1S L2R L1S L1S L1S</p> <p>L2RIL1R L1S L1S L1S; L2RIL1R</p>

Appendix L: (Continued)

T3 R/T: Answering; word order		
206: R: weather. The weather should be good	Sug(E)	L1S
207: T: Ah	SugAcc	L2W
208: Tp gutes Wetter, before im Urlaub	SQuestS; ILK	L1S; L2S
209: Ah that wouldn't go with gehen though		
210: T: (laughs)		
211: R: Yeah you gotta put gehen and then start up	Sug(E); ILK	L1S; L2S
212: Dl gutes Wetter	SugAcc; edit	
213: T: These are places to go. We may want to say weather and stuff like that in another sentence	Sug(E); ILK	L1S
214: R: Yeah put it on the next line	Sacc; ESRa; Sug	L1S
215: T: Oh right here? Hmmm	ESR; SugAcc; CP;	L1S
216: Ak to move cursor to second row	PS	
217: R: Don't forget to put gehen there	visPro	L1S; L2S
218: T: Oh. I'm finished with that?	Sug(E); ILK	L1S
219: up ak to first row	NegCo; CP	
220: R: I don't know what else to put. I think it's done	Pace; closure	L1S

TIPPS --- TIPPS --- TIPPS

1. Start the recorder (red circle)
2. Logon mit NetID und Passwort
 - ▣ Courses
 - ▣ Beginning German 1
3. Das Wetter
 - ▣ Projects
 - ▣ Das Wetter
 - ▣ **Right click on the file and save it to your Desktop**

SAVE OFTEN

ü = Alt + 0252

ä = Alt + 0228

ö = Alt + 0246

ß = Alt + 0223

About the Author

Sabine Siekmann completed her Zwischenprüfung in the teacher education program at the University of Hamburg before receiving her Bachelor's Degree in English from Idaho State University in 1997 where she also received an interdisciplinary Master's Degree in English and Anthropology in 1999. During her Master's Degree she developed an interest in Instructional Technology and Computer Assisted Language Learning which lead to her enrollment in the Second Language Acquisition and Instructional Technology Ph.D. program at the University of South Florida.

During her time in the Ph.D program Ms. Siekmann taught English and German language courses as well as online courses in Instructional Technology. She acted as the inaugural president of the SLAQ student organization and worked in the Florida Center for Instructional Technology before accepting a position as the Director of the Language Resource Center at Gettysburg College. She has presented papers at regional national and international conferences and authored and co-authored several articles.